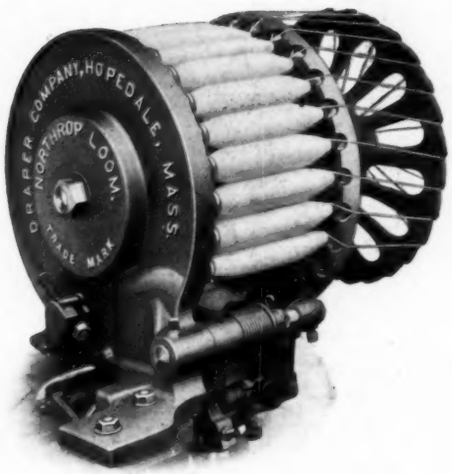
MAY 17 1913

COTTON

MAY, 1913



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Carries Bobbins at Uniform Level

Produces more even twist

Filling bobbins carry ten per cent. more yarn

The only real improvement in spindles for years

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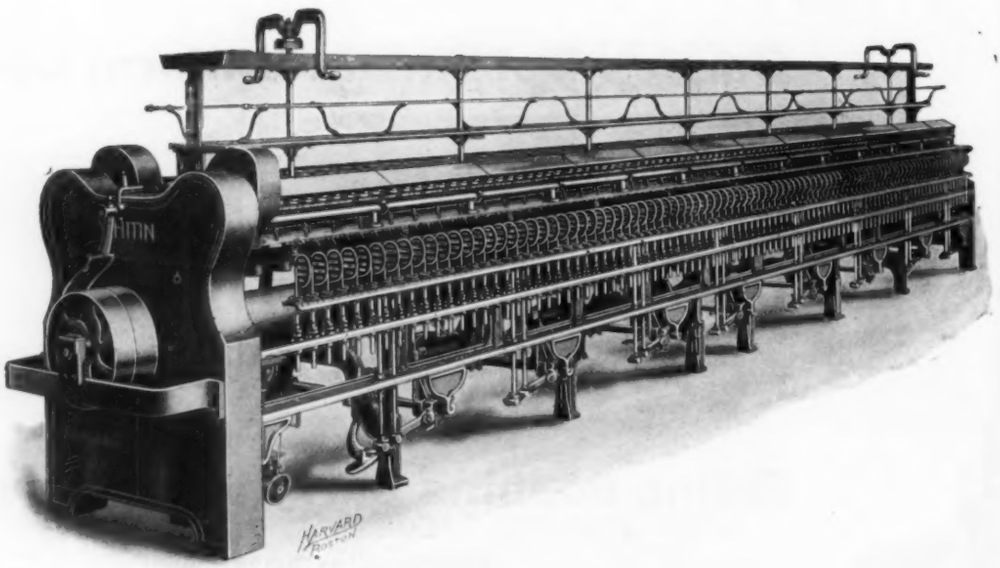

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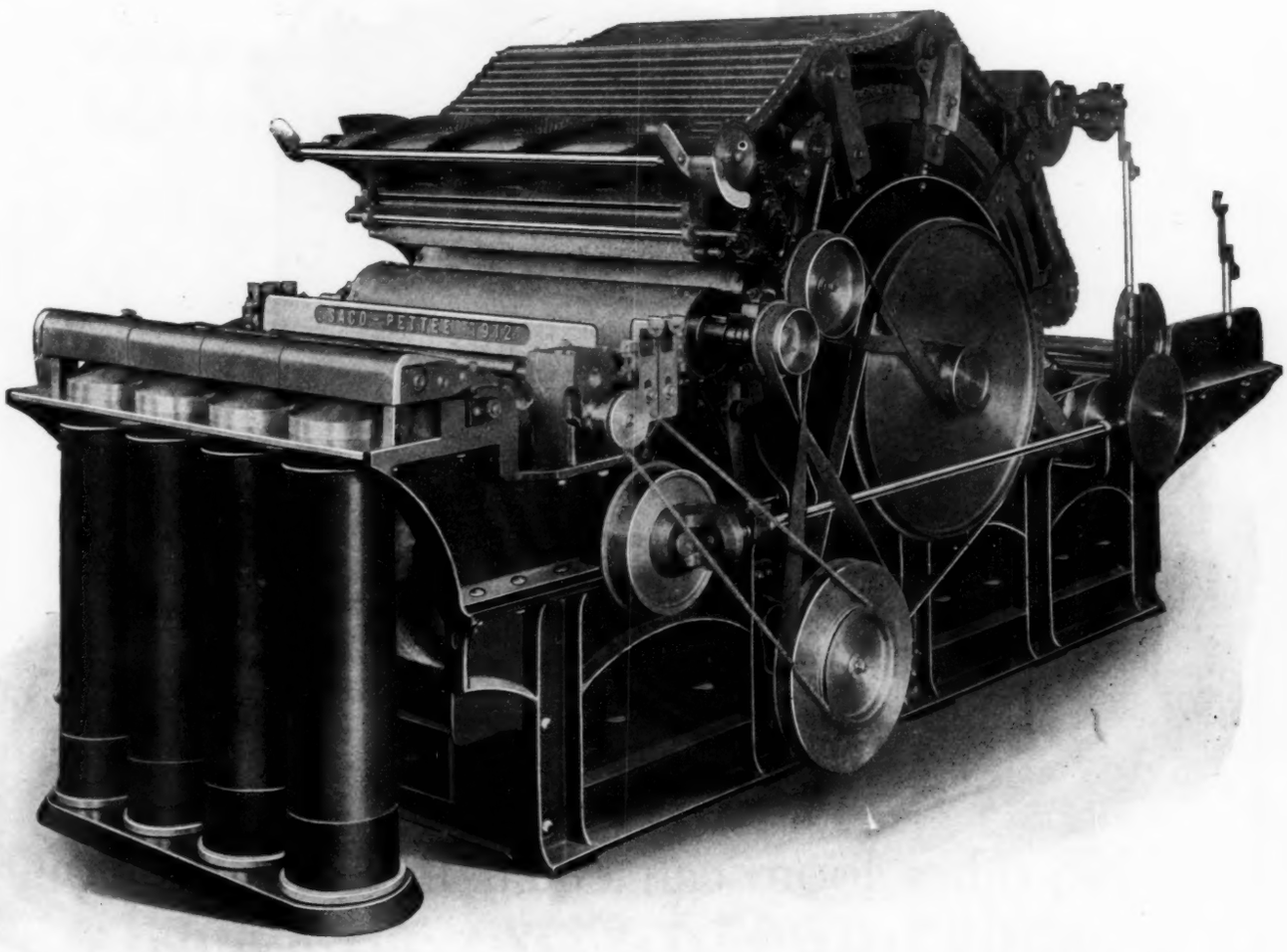

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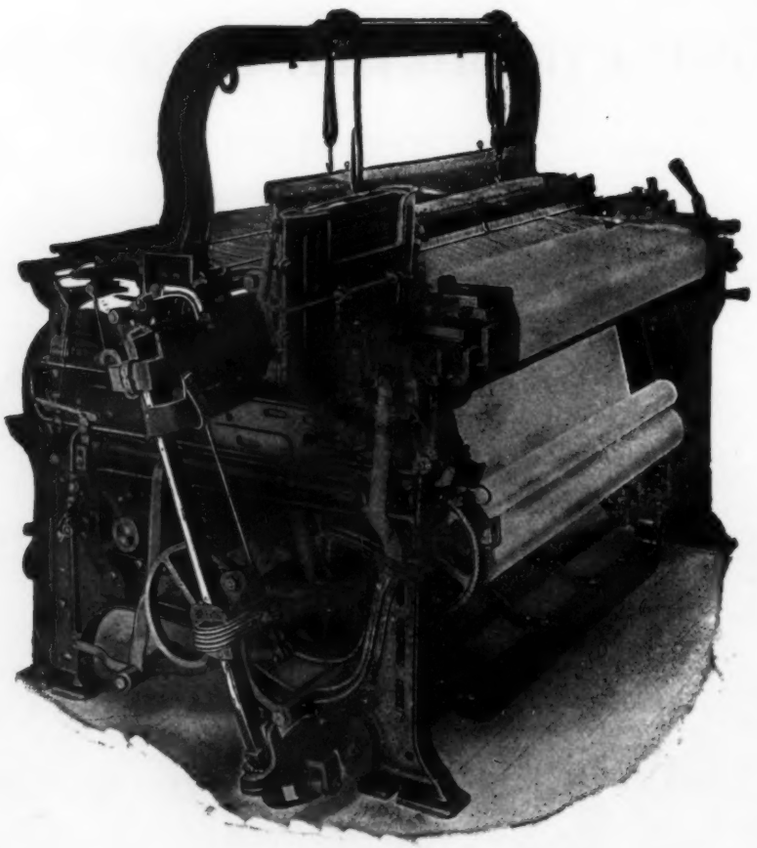

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The Crompton & Knowles Loom Works build a complete line of Dobbies accepted everywhere as the standard of excellence.

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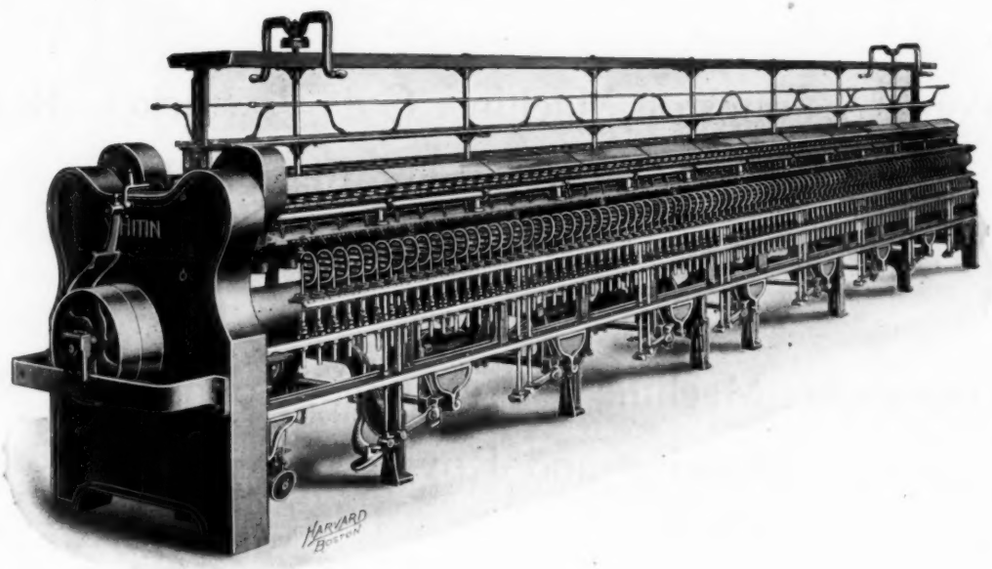
Cotton Mill Machinery



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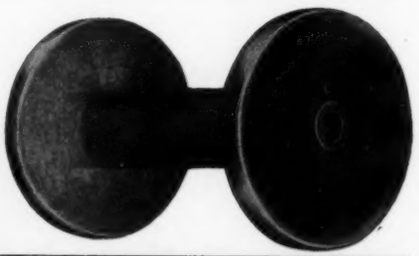
You say your loss from broken spools is but a mere trifle



Did you ever attempt to prove that statement? Do it, for your own satisfaction. The magnitude of this waste is not readily apparent in the stress of other matters, but if you will apply yourself to the matter you'll see it is a big item on the wrong side of your ledger. Our METAL PROTECTED SPOOLS will save practically all this loss for you. They rarely ever break or separate. When you consider that it's the full spool which breaks, you'll see why our METAL PROTECTED Spools save you big money. The metal does not rust or stain the yarn. It protects both the outside and inside of spool. We are making a special trial offer to mills who have never used our spool. Write for this offer and sample spools at once. ADDRESS ☞

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You want to get the best that your money will buy.

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TRY A BARREL FOR 60 DAYS

If it does not come up to your standard of what a good lubricating oil should be, and you consider that it is not worth our price—put your own value on it and remit on that basis. Isn't that a fair proposition? "A. C. C." will pare down your oil and cylinder repair bills—save your piston packing, too. It has been doing this for forty years, it will effect such a saving now — just give "A. C. C." a chance.

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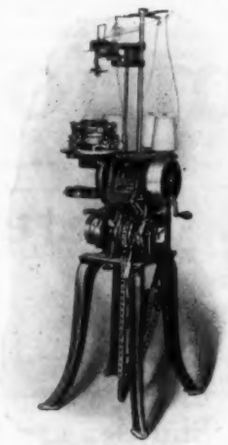

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The Palmer Adjustable Thread Guide

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Easily adjusted.

Extreme accuracy and permanence of setting.

Cheapest of them all.

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Steam Fans
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TELL ME YOUR REQUIREMENTS AND I WILL MAKE YOU A LOW PRICE ON A FAN THAT WILL DO YOUR WORK.

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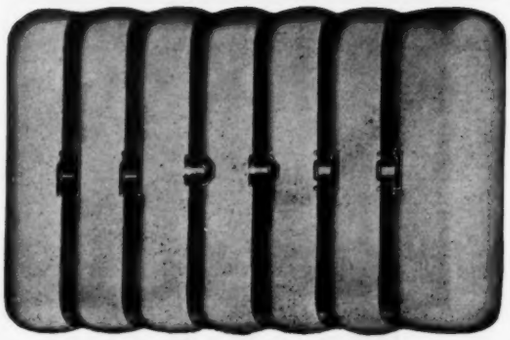

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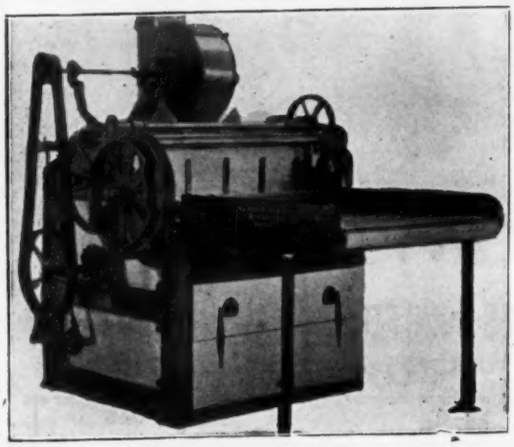

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For opening and dusting Wool, Cotton, Linters, Hair and kindred fibrous substances.

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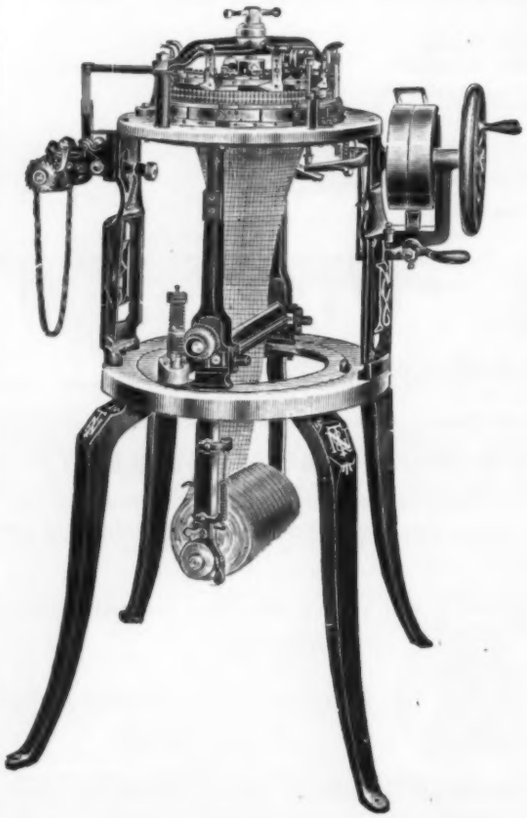

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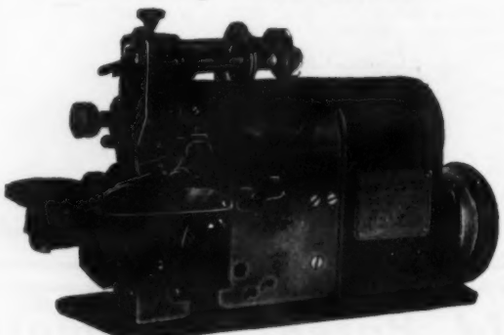
High Speed Overseaming, Overedging and Scallop Stitch Machines



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USE STYLE 17 or 22 for Bed Blankets.
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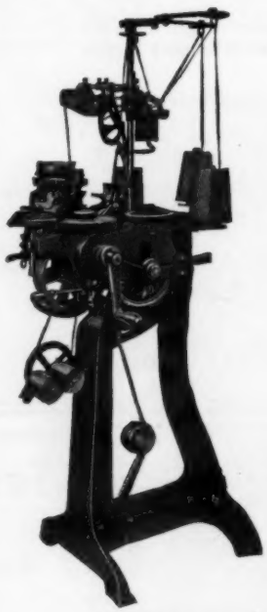

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Colored and Manila Piece Goods Wrappers — Cloth Winding Boards
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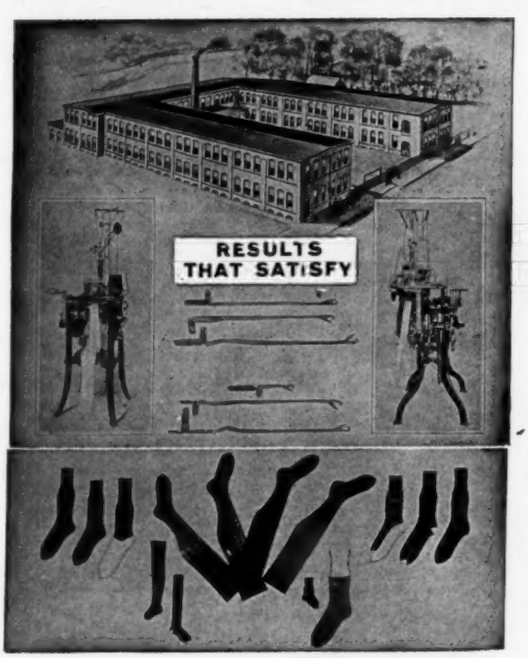

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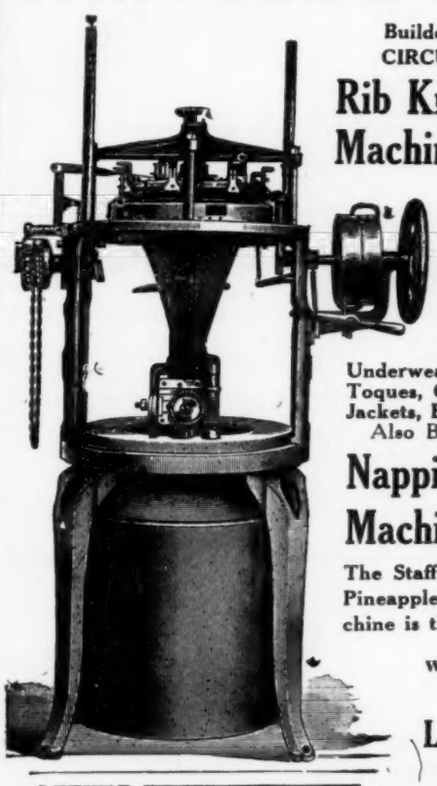

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For Knitting the Latest Style Fabrics.

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Underwear, Sweaters Toques, Cardigan Jackets, Borders, Etc.

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Underwear, Sweaters, Cuffs with Cut Welt, Selvage, or French Welt, Mantles, Collarettes, Toques, Golf Caps, Hosiery Tops, Skirts, Borders, Corset Covers, Button Stays, Mittens, Bandages.

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Established 1889 **NORRISTOWN, PENN.**

New Spinning Frame

Model B

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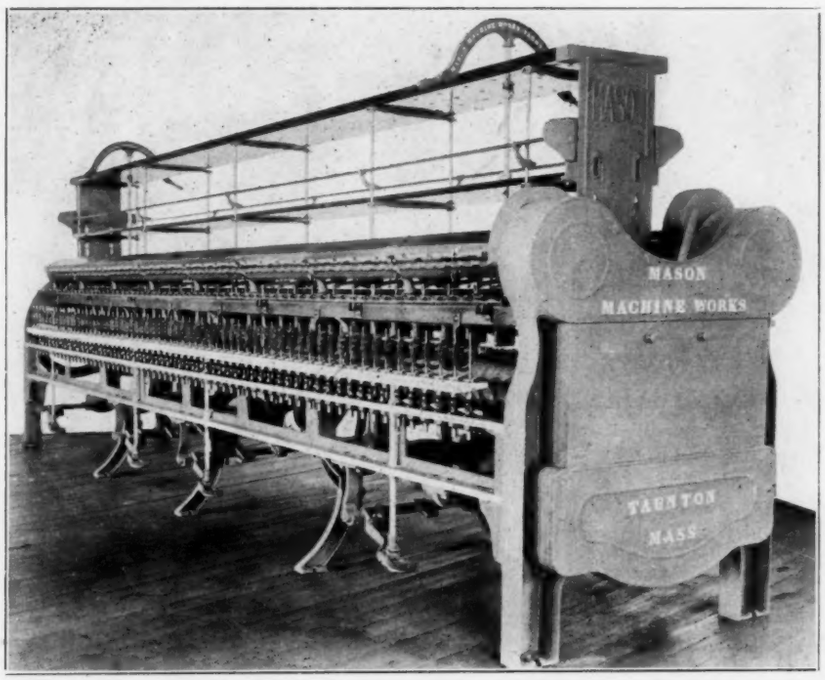
Spindles
Model B
Sold During
First 3 Years



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Gauges up to 4 Inches

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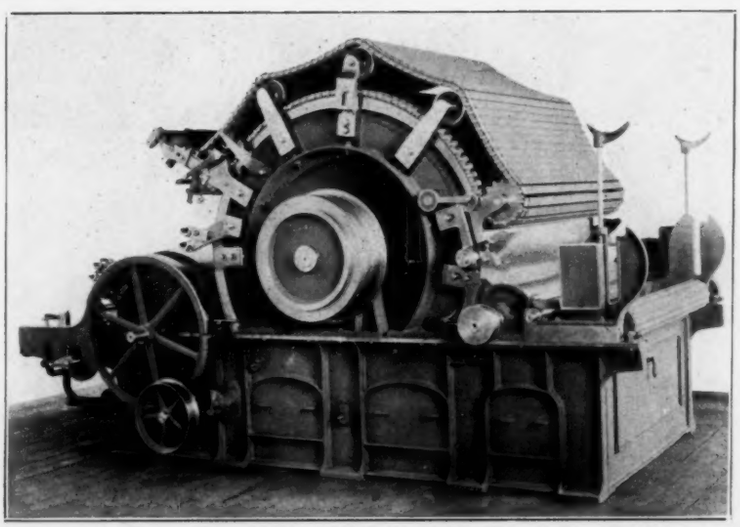

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FOR ALL TEXTILE USES

We were pioneers in the business of covering rollers with rubber, for various purposes. Our coverings have always been of the highest grade and are today the best obtainable.

We furnish rollers complete—both iron work and rubber covering—and also apply rubber coverings to old metal bodies.

We make a variety of coverings and furnish rollers to withstand the action of acids, alkalis and other chemicals, hot and cold liquors, great pressures and other severe conditions of service.

Let us estimate on your requir ments.

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Cotton rubber-lined hose, for outside or yard use.

We weave our own fabrics and apply a high grade, durable rubber lining. You will find our goods strong, serviceable and dependable.

Fabrics made in various weights for all kinds of service.

Linen hose, unlined.

A strong and comparatively inexpensive hose which is adapted for inside use where hose is kept closely reeled or folded in warm, dry rooms.

Our **"American Underwriters"** brand is an A1 hose which meets all Underwriters' requirements for this kind of material. Furnished in all sizes from $\frac{3}{4}$ to $2\frac{1}{2}$ inches and in lengths of 25, 50, 75, 100 feet or longer.

Rubber Belting **Packings**
Hose **Valves** **Diaphragms**

Manufactured by

BOSTON BELTING COMPANY

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The Greatest Improvement Made in Spinning in Twenty-Five Years.

The Richards-Hinds Roll

Guaranteed Claims

Cockley Yarn Preventor
Based on actual facts.

Extra Strength of Yarn
demonstrated by actual tests.

Less Waste
with better spin.

Greater Production with Improved Product.
Greater lineal speed per minute can be maintained.

Less Change of Settings
thus saving considerable time.

Reduced Cost for Spinning
on account of the better running of the work the spinners are enabled to run from 10 to 20 per cent more spindles.

One-third Saved on Leather Covered Rolls.
This will mean a yearly saving of at least 5 cents per spindle or 10 cents per roll.

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substantiated by actual experiment.

We also Build Our Line of **METALLIC ROLLS**

Especially adapted to cotton carding room machinery, and applied to the following machines.

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25 to 33 per cent more product guaranteed. Weights reduced from 33 to 50

The Metallic Drawing Roll Company

Incorporated 1890

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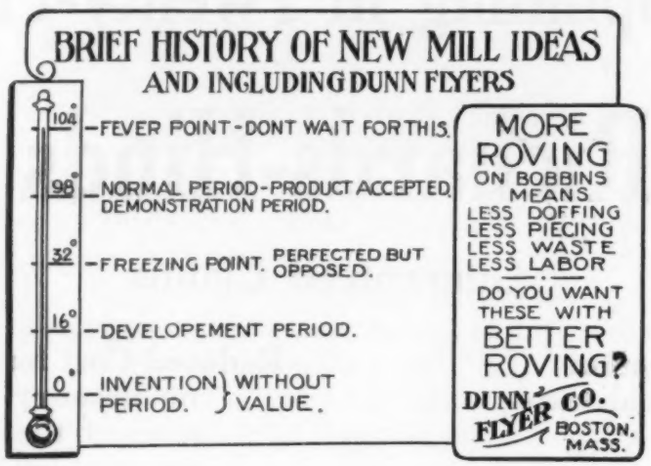


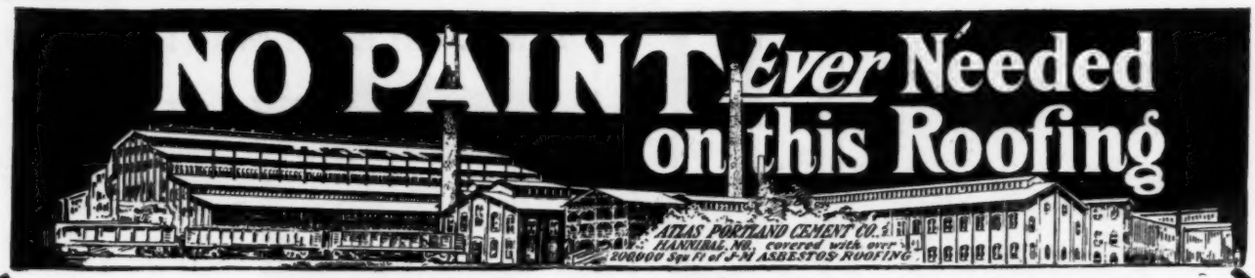
Kiburn, Lincoln & Co.

Makers of Looms for

Plain and Fancy Weaving

Fall River, Massachusetts

NO PAINT *Ever* Needed on this Roofing



The need of paint or gravel on a roofing is positive proof of its weakness—positive proof that the materials in the roofing would dry out, rot, rust, decay or otherwise deteriorate without such protection—positive proof that the roofing itself can't last long unless protected with a **mineral.**

Instead of a perishable animal or vegetable material only temporarily protected with a **thin** layer of mineral, such as paint, slag or gravel, J-M Asbestos Roofing is **one solid mass** of **minerals.** Not a particle of perishable material in it.

J-M Asbestos Roofing consists of layer-on-layer of pure Asbestos Felt, securely cemented together with genuine Trinidad Lake Asphalt. Asbestos is a rock, or stone, and, of course, stone needs no coating to make it last. And the Asphalt Cement between these stone layers is the same material that has withstood the severe duties of street paving for forty years. So J-M Asbestos Roofing is an **all-mineral** roofing.

J-M ASBESTOS ROOFING

is the only ready roofing that never requires a single cent's worth of coating or other protection. Its first cost is the only cost. Other ready roofings are a continual trouble and expense—for the paint and gravel wash and blow off and have to be renewed every few years.

Because of this mineral or stone construction, J-M Asbestos Roofing is also rust-proof, rot-proof and acid-proof. And fire that will melt iron won't ignite this roofing.

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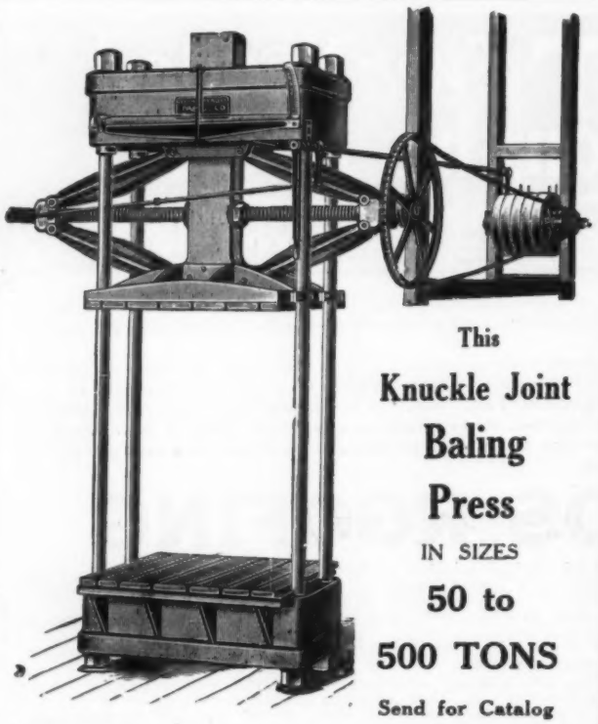

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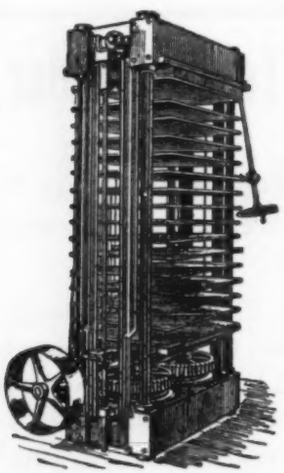

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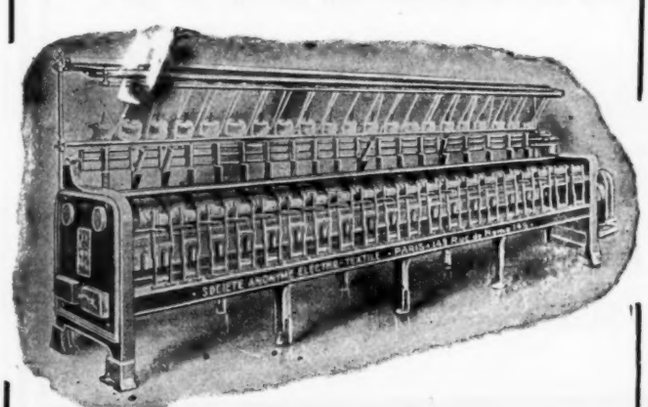

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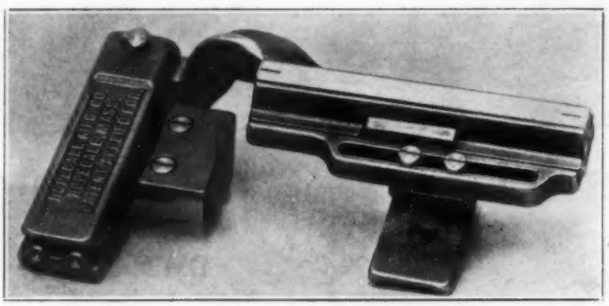

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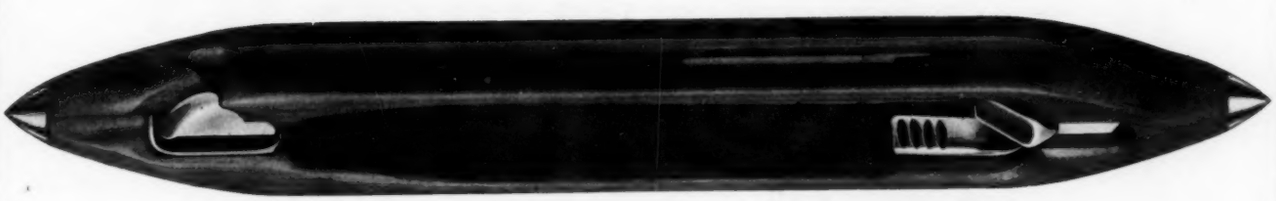

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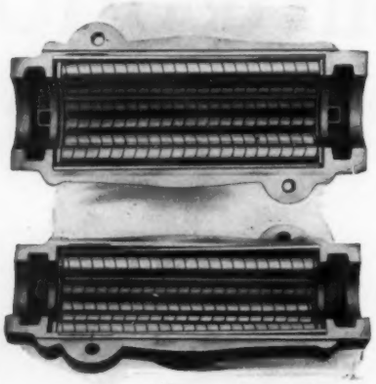

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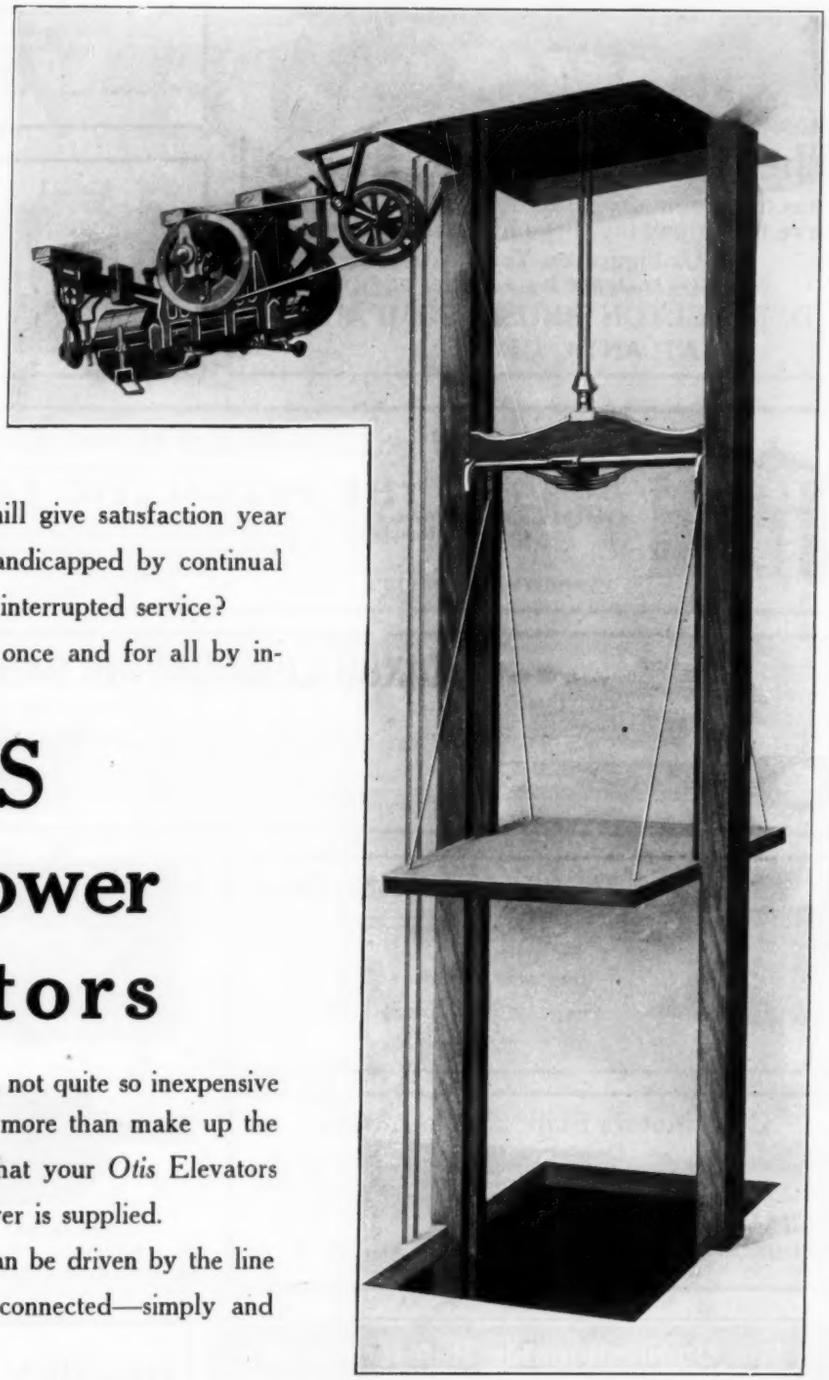

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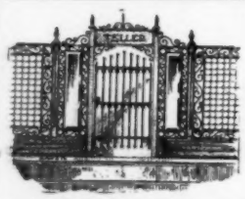

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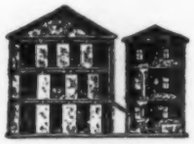

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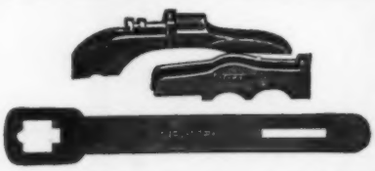

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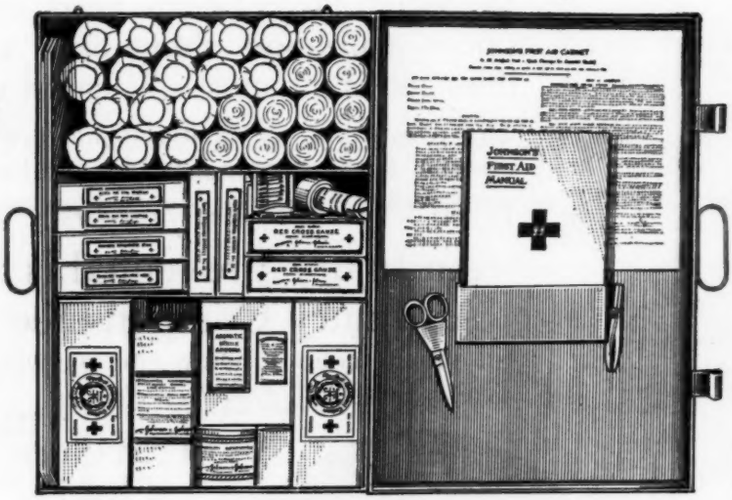

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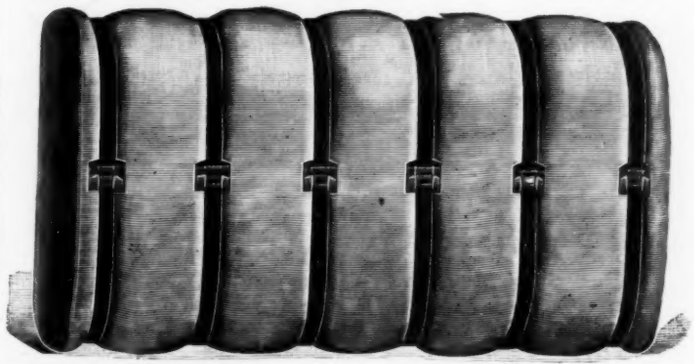

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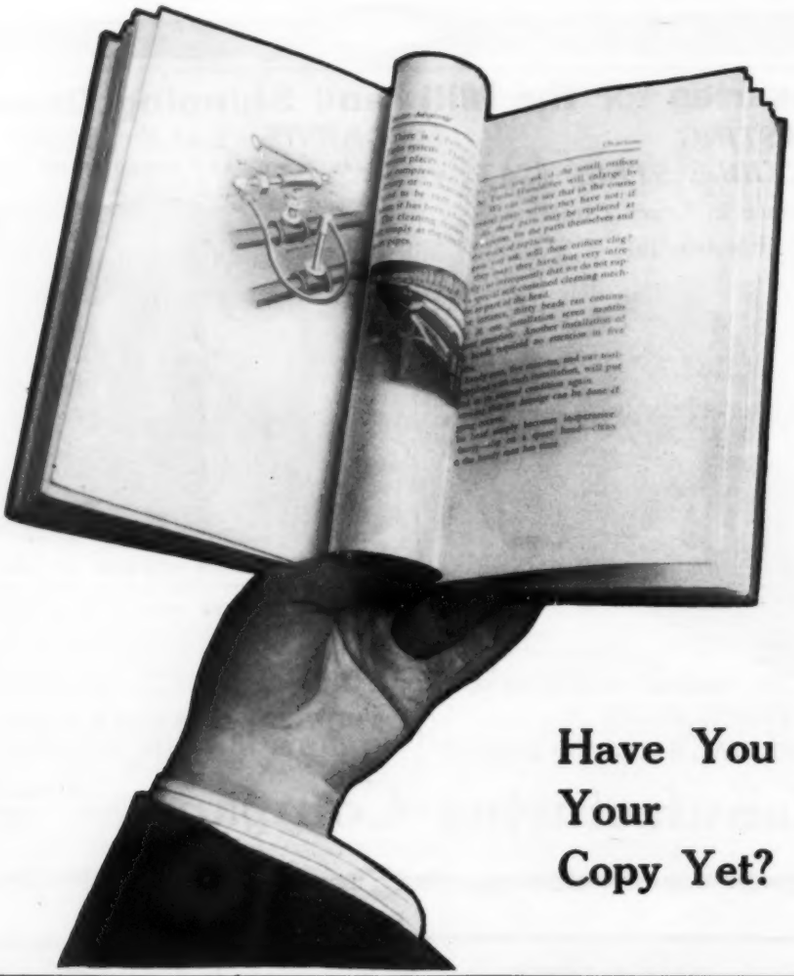

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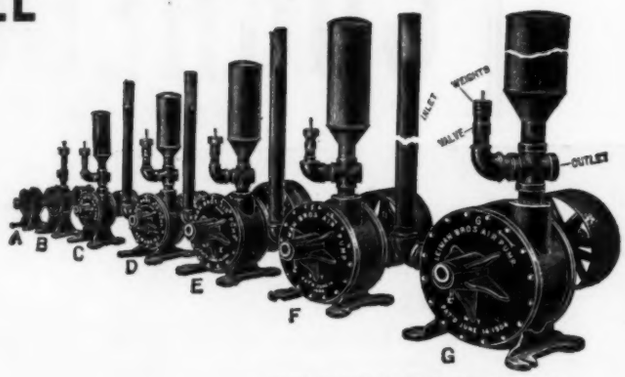

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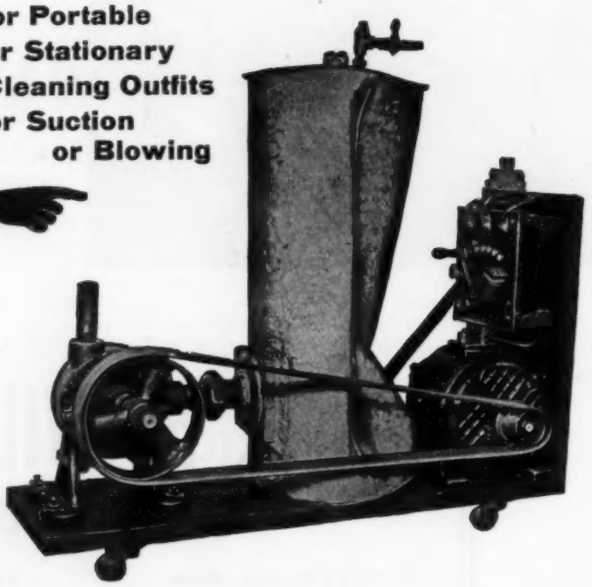

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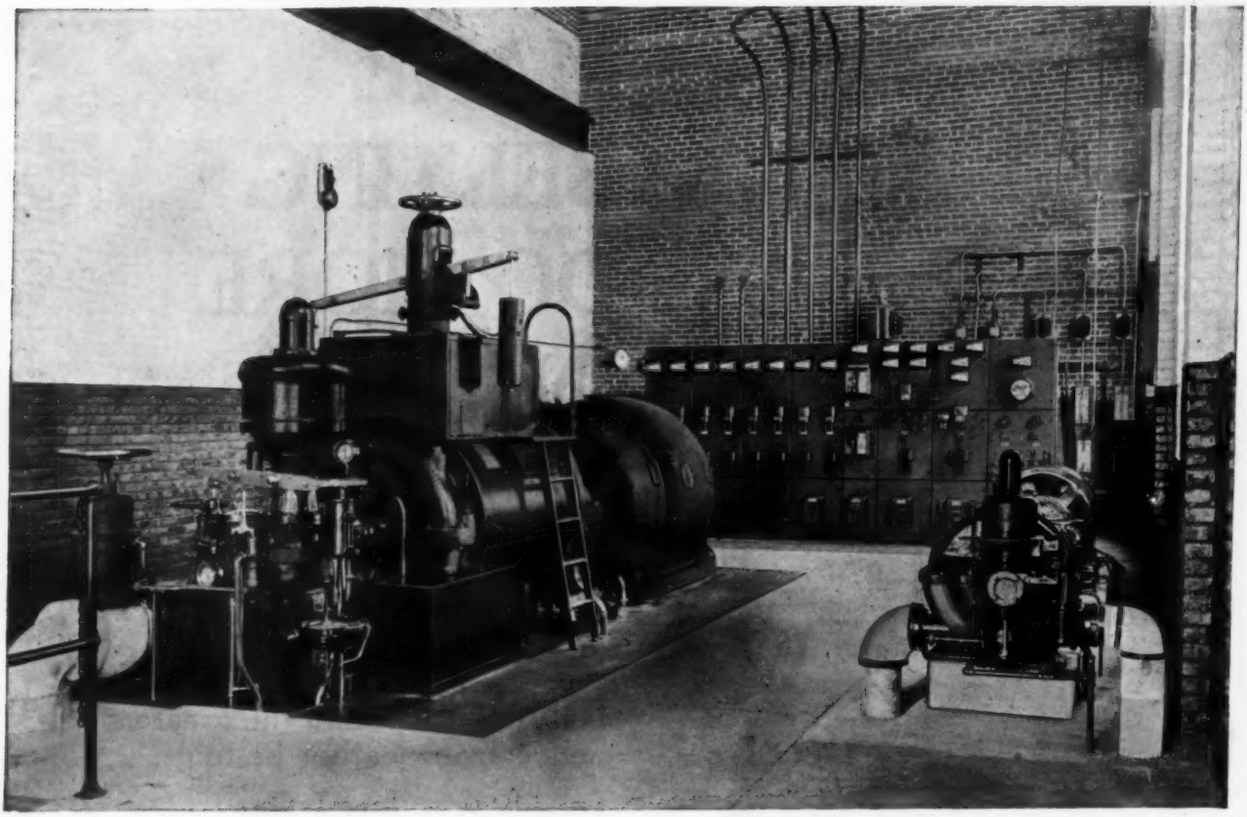

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The POWER CHARGE generally bears a good ratio to NET PROFIT. In a Textile Mill there are particularly good opportunities for effecting economies in this respect.

An automatic bleeder turbine, for instance, will furnish power at almost 100% efficiency as a by-product of the steam necessary for drying and other heating. This is because any heat not extracted in the form of power, still remains in the steam.

Our nearest district office will gladly furnish any specific information which you may desire on the subject.

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Prime Movers and Auxiliaries **East Pittsburgh, Pa.**

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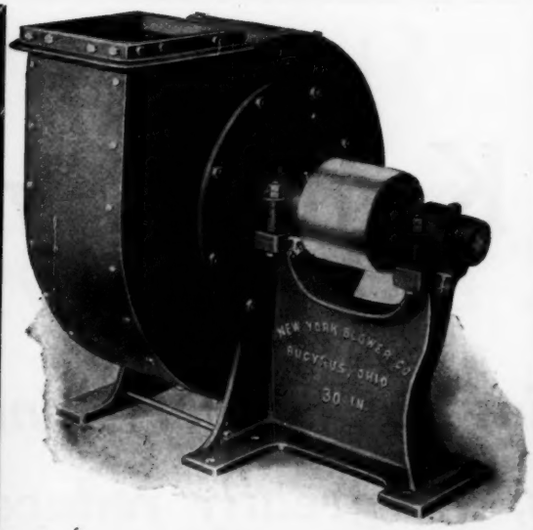

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To withstand
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THE Reversible Fan

For Handling Cotton, Jute and Long, Stringy, as well as Short Material

THIS FAN IS DIFFERENT, in that it can be reversed from left to right hand, or vice-versa. This is an important feature, as it very often saves the cost of a new fan when change of location is made.

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Works:
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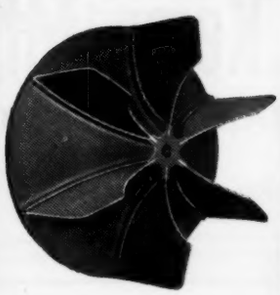

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of ***handling gas of every kind for fuel purposes,*** will ***greatly reduce the gas consumption,*** and ***increase the efficiency*** of any singeing machine, calender, tentering machine, furnace, oven, etc.

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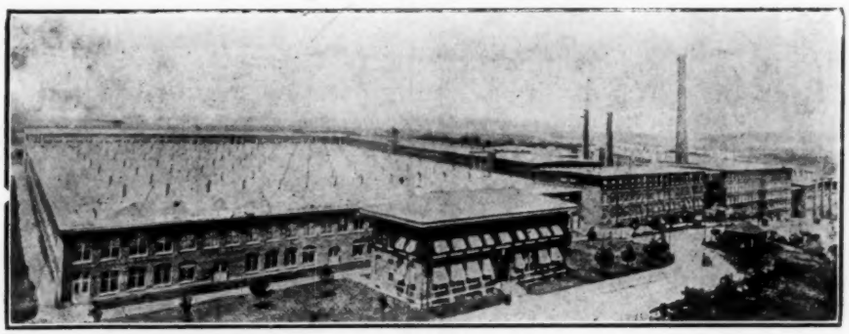
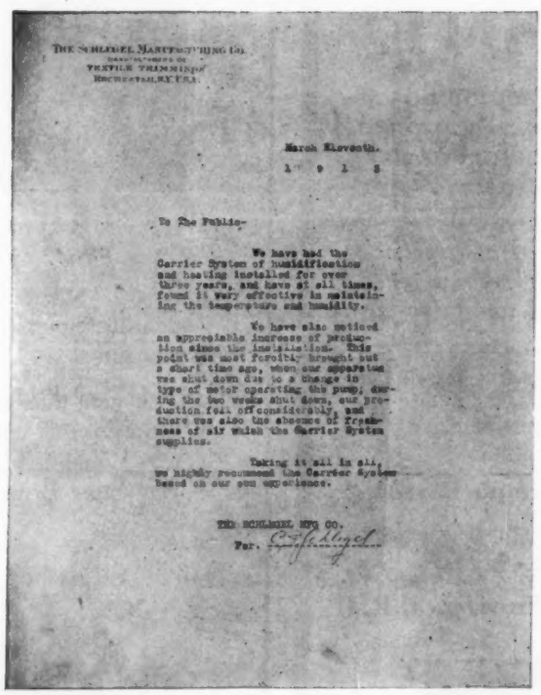


A Large Southern Mill Which We Are Equipping.



March Eleventh.

1 9 1 3

To The Public-

We have had the Carrier System of humidification and heating installed for over three years, and have at all times, found it very effective in maintaining the temperature and humidity.

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Taking it all in all, we highly recommend the Carrier System based on our own experience.

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Per.

Carrier Air Conditioning Co. of America

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If the side of your factory were a great door ———

you could swing it open and gain perhaps a solid hour of extra daylight. What would that be worth to you—in reduced lighting bills alone, to say nothing of the increased efficiency of your employees?

You can get 19 to 36 per cent extra daylight by simply painting your ceilings and walls with

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Rice's Mill White, containing no varnish, is easily and economically applied. It will not crack like an enamel or flake like a cold water paint. It stays white longer than any other gloss paint.

Rice's Mill White is the *original* "Mill White" Paint, made by a *special process* which cannot be used by any other paint manufacturer.

Rice's Mill White is sold direct in barrels containing sufficient paint to cover 20,000 square feet, one coat. If you have that area of ceiling and wall space to cover,

Write for Booklet and Sample Board

Ask for our booklet, "More Light". *Write today.*

U. S. GUTTA PERCHA PAINT CO.
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Textile mill superintendents should know about the qualities of

Bay State Brick and Cement Coating

"Lights like the sun"

because it reflects the light in the darkest rooms.

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It will not fall off when applied over delicate machinery and is impervious to moisture.

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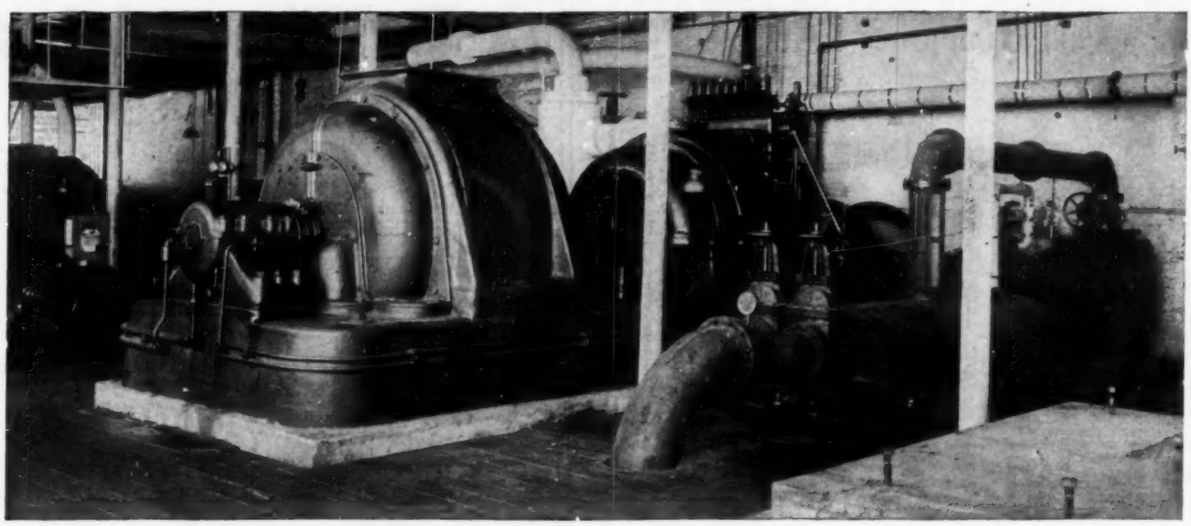

3,000-kw. Turbine Tremont and Suffolk Mills, Lowell, Mass.

The World's Largest and Most Important Cotton Mills are Substituting Electricity for Steam

Curtis Turbines are generating 200,000 horsepower in eighty-six New England cotton mills. Four years ago they furnished but 41,000 horsepower to twenty cotton mills. This shows that in New England:

Curtis Turbine Power Increased Nearly 400 per cent in Four Years

Among the mills using these turbines are the Pacific, Arlington, Tremont and Suffolk and Nashau.

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With Curtis Turbines under certain conditions, it is possible to get 40% more power from the same amount of coal, than is obtainable with the existing steam engine driven electric generators. Their operating economy is much greater than is obtainable with steam engines.

The total installed horsepower capacity of Curtis Turbines in New England cotton mills is well over 100% greater than that of their nearest competitor.

The Mill Power Department of the General Electric Company is made up of men who have installed the above and many other generators, as well as the motors through which pass 75% of all electric textile mill power used in this country. We have a specially designed motor for each textile use, a controller for every motor, and skilled engineers to apply them properly.

General Electric Company

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For Texas and Oklahoma business refer to General Electric Company of Texas,—Dallas, El Paso, Houston and Oklahoma City
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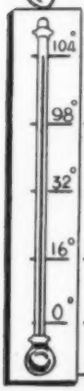
BRIEF HISTORY OF NEW MILL IDEAS
AND INCLUDING DUNN FLYERS



-FEVER POINT - DONT WAIT FOR THIS.

-NORMAL PERIOD - PRODUCT ACCEPTED. DEMONSTRATION PERIOD.

-FREEZING POINT. PERFECTED BUT OPPOSED.

-DEVELOPEMENT PERIOD.

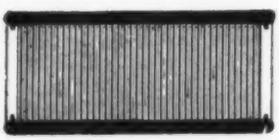
-INVENTION PERIOD. } WITHOUT VALUE.

MORE ROVING ON BOBBINS MEANS
LESS DOFFING
LESS PIECING
LESS WASTE
LESS LABOR

DO YOU WANT THESE WITH BETTER ROVING?

DUNN FLYER CO. BOSTON, MASS.

THE NAME **WHITAKER** ON YOUR

LOOM  **REEDS**

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Prices Quoted Upon Application

THE WHITAKER REED CO.
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A Brilliant Idea

Struck Mr. G. F. Ivey, an expert Mill Man, about five years ago and the result—

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Wears longer and costs less. Many thousands have been in operation for four years and more and are good yet.

IVEY'S

Picker Sticks and other supplies

GUARANTEED

to give satisfactory service.

IVEY MFG. CO., Hickory, N. C.

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Aniline and Alizarine Colors.

ALGOL COLORS for Cotton dyeing. Fast to light, washing and chlorine.

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GARLAND MFG. CO.,
Saco, Maine

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(This Issue 5,000 Copies)

COTTON

PUBLISHED MONTHLY

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COTTON PUBLISHING COMPANY,
C. S. McMahan, Treas.

Sworn to and subscribed before me
this 15th day of April, 1913.

J. C. MARTIN,
Notary Public, Fulton County, Ga.

My commission expires June 24th, 1916.

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COST KEEPING AND EFFICIENCY.

Do the mills of the South need to do more scientific research work? Would the employment of technically trained men or textile engineers, for the express purpose of making experiments and investigations tending toward the greater efficiency of machinery and operatives, prove a paying investment for the mills? These questions have been suggested by a series of letters from prominent Southern cotton manufacturers located in widely separated sections and covering a period of nearly two years, a few representative opinions from which are given here.

One manager of a large North Carolina mill suggests that COTTON should bring forcibly before the manufacturers of the South the fallacy of changing their mills onto new lines of goods, without investigating thoroughly beforehand the state of the market on those particular lines of goods and the actual cost of manufacturing them. "This is especially applicable to certain fancy lines," continues this manufacturer, "on which quite a number of manufacturers thought they were going to get rich, whereas, they eventually waked up to the fact that they had not figured their costs properly and were, in several cases, actually losing money, instead of making the big profit they had led themselves to believe they were making." He believes that every detail of the manufacture of a certain line should be intelligently studied before any attempt is made to begin producing, and the lack of such careful investigation and study invariably has a detrimental effect on the cotton mill business as a whole.

The treasurer of a Georgia mill says he believes cost accounting is a feature that too many mills neglect, and that it would be much better for the textile industry as a whole if the mills, and particularly the smaller mills, knew more nearly where they stand in the matter of costs. A wider knowledge of such costs would probably eliminate a disturbing factor in the trade for the reason that the smaller mills, particularly at slack periods, are prone to name prices on goods which are too near the cost of production. No doubt this is largely due to their lack of exact knowledge as to what these costs really are.

A North Carolina treasurer suggests that there is a wide field for improvement in the every day business methods of Southern mills in their efforts to ascertain production costs on cotton yarns, and believes that as a general rule, they are not systematic and up-to-date in this matter. The vice-president and general manager of a yarn mill situated in another Southern state held a similar opinion, and thought that if comparisons could be made of the cost of manufacturing and selling on certain similar yarn products, that in view of the great difference in the prices quoted on such yarns it could be proven that the prices quoted by some mills were actually below the cost of production.

A Virginia mill treasurer is of the opinion that Southern manufacturing methods are still crude in some respects, and

that a higher standard is most valuable and desirable. Also a Texas treasurer is fully convinced that the wretched conditions obtaining among Southern mills a few years ago was chargeable more to a lack of education among mills, and growing from this lack of education, the uneducated, uneconomical and unbusiness-like way in which the products of the mills were marketed, than from all other factors combined.

This evidence covers practically every branch of the industry in the South, except bleaching and finishing, and seems to indicate a need for specially prepared men to successfully prosecute such investigative and experimental efficiency work. Such a man should not only be able to install a reliable and comparatively inexpensive cost keeping system, but he should also be technically trained to carry on such practical experiments as may present themselves in the cotton manufacturing industry. A few examples of these might be an investigation to determine the best speeds for the operation of the different machines; drafts and roll settings in carding and spinning that will produce the best final results; the best twists; the most economical grade of cotton to use in view of the final product desired; the percentage of humidity to use in each room under the varying conditions of practice; the proper methods of preparing size and the best materials to be used in the process; the work of analytically defining the purity of such materials and thereby rendering assistance to the buyer in determining the real value in relation to the price; the various questions of waste and its utilization, and the most successful methods of compensating labor.

In order that such tests may prove of the greatest ultimate value to the mill, they should keep very complete and accurate records of each. Congress has recently made a small appropriation for a spinning mill wherein to carry on such general experiments, but it is of doubtful benefit as far as the cotton manufacturer is concerned. What is needed should be determined by the conditions obtaining in each individual mill.

These conditions will naturally vary greatly in different mills and the men aspiring to a position such as that outlined must of necessity have the quality of adaptability. They should be men who can reason out the causes and effects, or deduce either from the other. It may be that such men would be difficult to obtain, but if the demand for them increased, the attention of the technical schools would be immediately called to the fact and the sources of supply would be likewise increased.

In the case of the smaller or medium-size mills, under 50,000 spindles for example, there might be excellent openings for such graduates of our textile schools as would be willing to devote some extra time to the study of such essentials as were not included in the regular textile course. These young men, while they lack much practical experience, and are untried factors in the management of help, are often especially qualified to delve into the necessary experimental work under the direction of the practical superintendent, who can easily outline what he wishes to find out, but who is always so overburdened with the actual daily problems of his position that he has not the spare time necessary to devote to the physical details that are entailed.

Hon. G. Gunby Jordan outlined the necessity of more technically trained men in his able article on "Industrial Education" in COTTON for December, 1912, and referred several times to the superiority of the Germans in this connection. The Germans are also well advanced in scientific research work and it will be a wise move on the part of American cotton manufacturers to emulate some of the examples already set in other lines of manufacturing efficieney work in this country and abroad. It is at least worthy of careful investigation and trial.

COOPERATE AND ADVERTISE.

Advertising is the needed stimulus to call to the attention of the nation the wonderful future prospects of the South—"The Land of Cotton."

All that has been done to make the South the independent manufacturing and industrial center that it is today has proven that we do not lack in the essentials, brain and brawn, facilities and natural conditions. Being especially favored by lengthy open seasons and good climate, we can look with pride upon our successes; our numerous mills; and our other industrial and commercial undertakings of various kinds. They have brought money, employment and a fair living to our labor. Many localities have been transformed from passive and poor settlements to enlivened and prosperous communities. Stores have steadily grown larger; homes more spacious and comfortable; public and business buildings have towered to heights that but a few short years ago were practically unknown; and our transportation service is unsurpassed anywhere.

All this has been largely accomplished by our own money as well as by our own efforts, but it is now time to scoop in the "outside dollar." After all, it is the dollar that comes through trade or business from people away from home, no matter whether foreign or domestic, and that drifts into circulation among our merchants, that is our true prosperity and that ultimately increases our own capital. Our cotton has been sold, an exchange for outside dollars which has brought new money among us; several other of our raw products have done the same thing and we have been benefitted. But, there is an immense opportunity open to our mills and mercantile houses to share in those larger profits now going to others, through further perfecting our present industries and through the adoption and upbuilding of new industries to promote the shipping of more of our present raw materials in the form of manufactured goods.

To do this work successfully we need more money and more men. We need intelligent settlers for the unimproved farm lands of this section who will, through intensive cultivation, produce more of the raw materials. We need more industrial plants and more experienced workmen to operate them. Above all things, we need to advertise the advantages and opportunities which the South has to offer.

A few of the "live wire" cities and towns are already doing this with wonderful results. A resident of one of the smaller of these cities said recently, "Although there is construction work going on amounting to more than $250,000, new arrivals at the present time have great trouble in securing suitable houses because new building has not kept pace with the influx of inhabitants." And this particular city has only been purchasing publicly for a few months.

Every city in the South, large or small, should have a Board of Trade or Chamber of Commerce formed of and supported by the business men. They should cooperate for the general good of all, sinking individual interests and supporting community patriotism. In active charge of this organization there should be a secretary and a publicity manager. Frequently these offices are synonymous. In any case, the man in charge should be a "live one." His work

will naturally follow along the same general lines of other publicity men employed by private interests, namely, to attract national attention to his city and display the opportunities and advantages to be derived from locating there.

To do this successfully requires the purchase of space in an advertising medium that is read by the people you desire for prospective citizens. It will take some money—certainly. But it will bring results. Other cities are doing this advertising successfully. Why not yours?

H. R.—10.

The Underwood-Wilson tariff bill has arrived. Moreover, it has caused consternation among the cotton manufacturers. Cotton mill men who had forced themselves to the point of accepting the Parker schedule, with its drastic cuts that in many classifications hewed closely to the danger line, and which schedule they had been assured by persons in authority would be closely followed by the Committee on Ways and Means in the preparation of the House tariff bill, were indeed astounded. One prominent manufacturer is quoted as saying: "I always thought I was a Democrat, but if this bill represents democracy, I am not now prepared to say what I am."

The primal reason for severe cuts in the cotton schedule arise from the fact that much misinformation was spread throughout the country during the recent presidential campaign, one branch of which was the supposedly enormous dividends paid by cotton mills to stockholders.

Cotton manufacturing is one of our enterprises which the so-called "trusts" have not yet gone into. It is widely scattered in the hands of a large number of comparatively small corporations and firms. A few concerns have been forced to consolidate on account of hard times during bad years to save their stockholders from a greater loss. Diametrically opposed to the methods of high finance, 90 per cent of the mills in this country are capitalized for only 50 to 75 per cent of what it actually cost to build them.

The history of the business shows that mill stocks would not be attractive to investors if issued as of 100 per cent of cost value; hence the custom to start with small capital, skip dividends for a period of years until the concern gets out of debt, and after that, use the profits, (except very small dividends), to increase the plant. This is the way our successful concerns have built up.

The average earnings of the mills in Fall River for twenty years, undercapitalized as they are, is approximately 6 per cent per annum. The mills of New Bedford paid but 4.4 per cent on the capital stock in 1912, 5.5 per cent in 1911, and 9.59 per cent in 1910.

It costs more to build mills in the South than in New England, on account of the distance from factories and supplies. Homes for the people have to be built; also churches and schools. Schools must be equipped with appliances and furnished with teachers, for these Southern states do not have educational advantages as fully developed as is the case in Massachusetts. The mills have met this deficiency and have become the greatest known factors in bettering the condition of the workers, until today the people in the localities where mill help is recruited are waiting for a chance to go out and improve themselves. All these things cost money, and it is of course necessary for Southern mills to pay dividends in order that their owners may contribute the operating costs for the support of these necessary "welfare" accessories.

Let us now consider a few facts about Southern mills and mill stocks. Hard, cold facts that could be verified by any mill stock broker or investor. The average cost value of any well equipped Southern mill is $21 per spindle, but the present share value is only approximately 50 per cent of this cost. In other words, $11.50 to $13.00 per spindle is as much as the average purchaser will pay for shares in Southern mills. If they are the veritable gold mines tariff makers would have us think they are, why this sag in share values?

One of the best Southern mills paid an average dividend of 13 per cent on its real value for the five years 1905-09. As another and still better example, we will select seven well known good earning Southern mills capitalized at $3,522,000, but the properties actually cost $6,090,000. For the four best consecutive years in the history of these mills the average profit of the four-year period based on actual cost was 11.75 per cent, but when based on the capitalization it showed 23.5 per cent. This does not include any very bad years like 1910 for example, nor would it be fair to judge smaller and not so successful mills by the same standard.

The custom of organizing an English mill is to start with about 25 per cent of the paid up shares and borrow the balance on corporation long time notes at low rates of interest. After these notes are paid, large dividends are sometimes paid on a small number of shares.

When big dividends are talked about, either abroad or at home, it is safe to ascertain whether these are possible on account of big profits or because of small capital.

Much has been written and said about the tariff, and doubtless the rates on some articles can be reduced a little without detriment to any one, as was indicated by the Parker competitive schedule, but most of such reductions can only end in disappointment to the consumer by not lowering the price to him as he is expecting it to be lowered. This trouble is more with the cost of distribution than with manufacturing and is an entirely different problem so far as cotton goods are concerned.

Whatever is done to the schedule it should be so fixed that every mill in the country, large or small, regardless of its geographical location or the quality or kind of textile construction manufactured, will receive a "square deal." This is absolutely necessary for the support of the two million people who are industrially dependent on the operation of these mills. Also there is probably another million, many of them widows and orphans, dependent on the dividend returns from their financial investments in cotton manufacturing establishments.

Thus we find approximately three million people directly dependent upon the successful operation of the industry as a whole, while the number indirectly concerned cannot fairly be computed in as much as the radiating branches of the cotton industry reach into practically every business institution and every home in the land.

The earnest protest of the American Cotton Manufacturers' Association recently submitted to the Democratic caucus at Washington should be heeded and the facts and figures so frankly furnished by the members of the Tariff Committee of this association to the members of the Committee on Ways and Means should be thoroughly studied by every senator before committing himself on a measure of such vital importance to the welfare of one of the greatest industries of the country and to those dependent upon it for a livelihood.

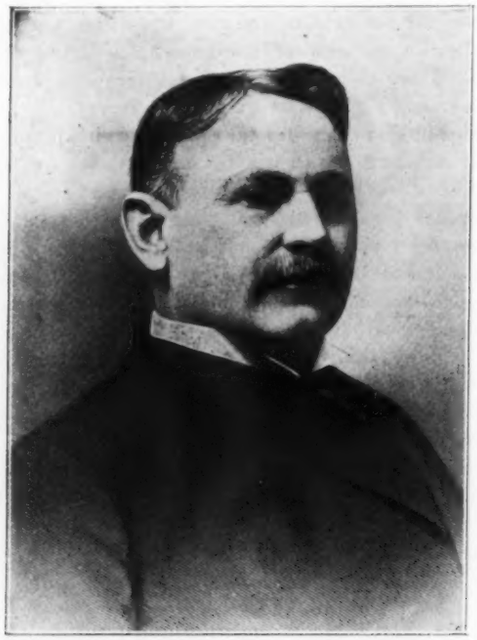
American Cotton Manufacturers' Association.

The seventeenth annual convention of the American Cotton Manufacturers' Association was held at the New Willard Hotel, Washington, D. C., on the 8th, 9th and 10th of April. About 400 members and guests were present, and great interest was manifested in the subjects brought up for discussion. An especial cause for interest was the fact that the special session of Congress had convened on April 7, and the new Underwood-Wilson tariff bill had just been submitted to the House.

This bill was much more radical in its treatment of Schedule I than the members of the tariff committee of the association had been led to believe it would be, and many of the leading manufacturers present roundly denounced a number of its provisions as impossible and tending to work great harm to the industry, particularly the fine yarn mills.

TUESDAY'S SESSION.

Promptly at 10 o'clock President Erwin called the meeting to order. Owing to the illness of the chaplain the usual opening prayer was omitted and the president delivered his annual address. He reviewed the history of the past year and in reference to the tariff laid stress on the fact that "a downward revision of the tariff, which the party now in power, and having a majority in both houses of Congress, is committed to, is fraught with hazard not only to the success, but very existence of some of our industrial and commercial enterprises. This revision is contemplated with the gravest apprehensions on the part of the members of the association."



W. A. ERWIN, THE RETIRING PRESIDENT.

Immediately following this address came some announcements by the secertary, among which was one to the effect that D. Y. Cooper wished to say a few words. Mr. Cooper went forward and made a happy presentation speech, after which he delivered the association medal to the retiring president, W. A. Erwin, who responded briefly.

The next feature of the program was a paper on the "Methods of Growing and Handling Egyptian Cotton," by Alfred Reinhart, of Reinhart & Co., Alexandria, Egypt. Mr. Reinhart expressed his pleasure at being invited to address the convention and said, in part:

To give you an idea of the importance cotton growing has assumed in Egypt, I may say that of the somewhat over 5,434,000 acres at present under cultivation, of which 3,211,000 acres in Lower and about 2,223,000 acres in Upper Egypt, very nearly one-third is planted in cotton, and the crop harvested during the last few years had a value of close on to $200,000,000.

The process of land preparation, sowing, chopping, weeding and so on, is done in much the same way as in other cotton growing countries. As we have no rain during the summer; watering is done entirely by irrigation, in rotations of two or three weeks, if the water supply is plentiful. This reliance on artificial watering constitutes really the essential difference in cotton culture between America and Egypt.

Our method of buying and handling of cotton in the interior is, however, quite different from yours. In the first instance the planter almost invariably sells his crop in seed. All cotton is bought or sold on net weights, an allowance being made in the accounts for the actual tare. For seed cotton sacks the usual allowance is from 5 to 6 pounds, and for hydraulically pressed bales, or village bales, from 14 to 19 pounds, according to the weight of the bale. Payment is made against all purchases of seed cotton in British gold sovereigns.

You will, perhaps, also be interested to learn something of the cost of planting. If a man's property is worked by hired labor, it costs him $15 to $20 to work one feddan, or acre, provided that conditions for watering, which is done either by aid of irrigation or artesian wells, are favorable. In the case of lands situated far away from large canals, where steam or cattle driven pumps are used for watering, the cost of raising cotton frequently amounts to $25 to $30 per feddan. Plowing, hoeing and weeding absorbs about $5; picking, $3 to $4, and irrigation $5 to $13. Taxes are assessed according to the value of the land, and vary from $2 to $9 per feddan. In addition, there is, of course the price of seed, which comes to about $2 per feddan, and somewhere about 90 pounds of seed is required for one feddan.

If insects, such as worms, in June and July, or boll worms in September, make their appearance, such pests necessitate supplementary outlay from $4 to sometimes as much as $20 in order to save the crop from partial destruction. The yield of lint per feddan depends, of course, on the quality of the soil, and also on the conditions of watering.

On a rough estimate, the fellah has been able to sell his crop during the last few years at about $20 per seed cotton cantar, that is to say, basing myself on an average yield of only four cantars, he realized $80 per feddan which, under the most unfavorable conditions, costs him $40 to grow.

In Upper Egypt, picking begins toward the end of August, and in Lower Egypt about the middle of September. Picking is done mostly by children, under the supervision of a grown-up person. Schools, if there are any, close down during this period, in order to give the children an oppor-

tunity of earning from 10 to 15 cents a day. The work starts in the morning when the sun is up and when the heavy dew, consequent upon irrigation, has disappeared, in order to prevent dry leaf sticking to the damp cotton. The amount of cotton picked during a day's work by a child is about 25 pounds seed cotton. As soon as a sufficient quantity is picked it is filled in sacks, each one containing, roughly, 400 pounds.

In case the grower has not sold his cotton, he keeps it on the field or in the village until some buyer comes along and offers him a convenient price. Some large land owners and cultivators in Lower Egypt store the cotton in seed in their own barns until they obtain their price and the buyer comes to take delivery. It also happens that picked cotton is left spread out over night on the field in order to increase its weight through the heavy night dews which are so frequent in Egypt.

From the villages the cotton is transported either by the government railways, or by the narrow-gauge agricultural lines, as well as by barges on the canal, or on the back of camels. A camel carries two sacks of about 450 pounds each.

Each ginning factory employs one or several classers, whose duty it is to grade the seed cotton sacks. There are steam presses attached to some of the ginning factories and some of the exporters press their cotton for shipment immediately after ginning, but this system is not general, as most firms prefer to have the up-country classification controlled by their Alexandria experts before finally pressing the cotton.

There are about 150 ginning factories in Egypt, situated in the larger cotton centers of Lower and Upper Egypt. On the whole, they are on a much larger plan than yours, and each factory has from 20 to 140 gins, all Platt's pattern with leather roller, the same style as those used in the Sea Island districts. Saw gins are only in use for separating from the seed the afritta, which corresponds to your linters. This style has been found to be the most suitable for long staple cotton and does not cause any gincut.

The usual charge for ginning one cantar of cotton is from 30 to 40 cents. The output of a gin per hour is on an average 110 pounds of lint. The gins are generally fed by native children under the supervision of European foremen, and the wages paid for a working day of 16 hours, are from twelve and one-half to twenty-five cents. And here I might remark that children below the age of 13 are not allowed to work in the ginning factories. If adults are employed, they usually get from 20 to 40 cents for the day. Of course, the children do not work 16 hours right through, but arrange for shifts of three or four hours with intervals for meals. The factory runs without stopping for 16 hours.

Every ginning factory has hydraulic presses with an opening room attached, to which the cotton is conveyed from the gins on trolley rails. There the cotton is spread out and slightly sprayed in order to give it back the natural humidity which is partly lost during the ginning process on account of evaporation. Then the cotton is put into the press boxes worked by hydraulic pressure, and the finished bale, with four to six hoops and well covered with bagging, has about the same shape as has an American plantation bale, but is much more densely pressed and weighs from 600 to even 1,000 pounds.

As already pointed out, the cultivator sells his cotton crop almost exclusively in seed, either to Alexandria exporters direct through the intermediary of native or foreign agents and dealers, as well as through banks established in Alexandria having interior branches. When a fellah sells in this way, he stipulates "on call" terms, that is to say, he sells his anticipated production at a premium above or a discount below quotations at the Alexandria futures exchange. He has the option of fixing the price until the expiration of the month of delivery on which the price is based. On conclusion of a contract of this kind, the seller further insists on a certain payment in advance, which is usually fixed at $5 per cantar (312 pounds) of seed cotton.

Banks do the business in another way. They advance money against more or less safe security, and against the promise to deliver a certain amount of cotton, which is ginned in the bank's name and then sent to Alexandria, where it is sold on the open market for account of the planter.

A distinctive feature of cotton trading in Egypt is the prolonged bargaining which is necessary before a transaction can be completed with the native and often with the European merchants. The seller, who frequently has no definite idea of the exact value of his cotton before offering it for sale, will submit a sample to several buyers in turn and, having obtained an offer, will ask an extortionate price and then go around to other prospective buyers trying to obtain an advance on the first offer, until he is fully satisfied that he has received the best price possible. This system, which naturally entails much waste of time, will perhaps be modified and improved in the course of years, but the difficulty with which any change depending on common agreement is made in Alexandria, stamps this cosmopolitan city indelibly as a part of the "unchanging East."

Situated in the same district are three pressing companies which warehouse the hydraulic bales, deliver them to the exporter's opening room to be selected, steam press them according to his instructions, warehouse the steam pressed bales and cart them to the quays for shipment.

It is unnecessary for me to explain to you that Egyptian cotton is sold equal to the exporter's standard in class, staple and style, and that most export firms have from 40 to 100 different standard types; this being so, you will understand that it is difficult to buy, against a sale of say 500 bales, a lot of 500 bales which corresponds exactly to type; therefore, the exporter is compelled to select several lots of cotton which, combined, will give him the quality and quantity required. These lots are brought to his opening room and one bale of each lot is stripped of its canvas opposite a large wooden case with a wooden grating on the top side, the dust is beaten from the cotton by women and then the men open it piece by piece on the grating (four or six men work to each bale) and throw it into the room where it makes a heap with the cotton thrown from the other bales; it is then bound up in loose sacking and stored at the further end of the room until the quantity required is finished and the cotton can be pressed.

It is obvious that, when this system is worked out accurately, through the care exercised in selecting lots equal to the type and the detailed examination of the cotton by the Arabs in the opening room under the supervision of an experienced foreman, a satisfactory even-running shipment must result. In the case of any lots of cotton which contain broken seed, stained cotton, leaf, mixture or other kinds of cotton, the opening is done with greater care and the imperfections are as far as possible removed. Owing to the cheap labor obtained in Alexandria (from 40 to 50 cents

per man per day) the exporter is fully repaid for the extra care which he bestows on the opening of his cotton by the improved outturn of his shipments.

The pressing establishments have from one to four steam presses in each building, and these are used by their clients in turn. Each press has three cases which, after a bale has been pressed, revolve for one-third of a circle, so that a case which has been previously filled, comes above the piston which applies the pressure. One piece of canvas is always placed on the bottom of the empty case which is half filled with cotton before the machine revolves; when the case comes into the second position, it is entirely filled with cotton by six men, who stamp on it. Then the case is moved into the third position over the piston which applies the pressure, the canvas for the remaining three sides of the bale is thrown over the top of the cotton so that it hangs over the sides of the case while the pressure is being applied, when the piston has reached its highest point the doors forming two sides of the case are opened and the bands for binding the bale are pushed through grooves prepared for them and buttoned, the piston then descends and the bale is pushed from the case and glides down a slope to the room where the two caps are sewn on the ends it is weighed and marked for shipment.

Although the Alexandria General Produce Association has no official contract forms for cotton shipment sales, there are three recognized methods in general use: The "cost, insurance and freight" terms which are used almost invariably with England and America, the "free on board" terms on which sales are usually made to the continent of Europe, and the "free on wagon" terms which are often employed in Trieste and some other Mediterranean ports.

Owing to the importance of the tariff situation the regular program was changed at this point to allow R. M. Miller, Jr., chairman of the tariff committee, to present a preliminary report in reference to its Washington meeting last January, which report was as follows:

A schedule of rates for revising the tariff on Cotton Manufactures was adopted for recommendation to Congress, drafted in accordance with the resolution adopted at the last meeting of this association, and as subsequently interpreted in Tariff Bulletin No. 5, *viz*:

"We favor a reasonable revision of the Cotton Schedule, based upon the figures at which importations are actually being made and can be made as shown by comparative manufacturers' selling prices at home and abroad, as shall be consistent with the raising of revenue and the conservation of our home market."

The action of the tariff committee was also in acceptance of the well-known views of the majority of the Ways and Means Committee, in that tariff revision was to be undertaken along the lines of a competitive tariff—where existing rates were competitive they would be maintained, but where not competitive they should be lowered accordingly.

Taking into account the percentage subdivision of the domestic production into coarse, medium, and fine, and applying co-efficients to rates in proportion thereto—

(1) On single cotton yarns in the gray, the average A. C. M. A. rates = 14.95 per cent; a reduction of 19.19 per cent on the present rates of 18.50 per cent; or, the present rates are 23.75 per cent higher than the A. C. M. A. rates!

(2) On cotton yarns advanced in manufacture, the average A. C. M. A. rates = 19.90 per cent; a reduction of 16.87 per cent on the present rates of 23.94 per cent; or, the present rates are 20.30 per cent higher than the A. C. M. A. rates!

(3) On cotton cloths of all classifications, the average A. C. M. A. rates = 24.30 per cent; a reduction of 40.16 per cent on the present rates or 40.61 per cent; or, the present rates are 67.12 per cent higher than the A. C. M. A. rates!

(4) On over 90 per cent of the distributions of cotton manufactures of all kinds in the United States, we have suggested very large reductions, duties ranging as low as 10 per cent, and none of them over 30 per cent. See page 49, Bulletin No. 6.

(5) We have only asked that approximately 7½ per cent of the total production of this country be considered as competitive, and we have shown that that proportion is competitive.

(6) On yarns for the trade above No. 40, we have shown that 19 per cent of the total American production is imported; we feel not only that this is competitive, but if anything, too much so; yet, we have asked no rate in excess of what now exists on them, and in many cases lower.

(7) On the particularly competitive point, our contact point, No. 78/2 and 80/2 yarns, we have shown that over 35 per cent of the total American production is imported! That really is an astounding state of affairs to us, and yet we have endorsed a rate that is now promoting such a large importation.

(8) The South alone makes nearly half of the total production of the United States on those counts (78/2 and 80/2). See page 15, Bulletin No. 6.

(9) Most of the mills, both Northern and Southern, have been forced off those numbers by foreign competition. See pages 16-19, Bulletin No. 6. Even the rate that we have suggested will probably increase importations under this classification, and any further reductions would simply be to transfer the manufacture of fine yarns to foreigners.

I might multiply these observations at further length, but the above will emphasize to you the closeness to the danger line of our suggested rates. In the judgment of most of us the tariff bill proposed by the Ways and Means committee is drastic and extreme. We firmly and honestly believe that the American Association's rates are close to the danger line, yet the Ways and Means Committee proposes rates 50 per cent lower still. This must be taken as a signal to get to work to prevent the passage of such legislation. We cannot afford to give up. It will be ruinous to the industry. I presume it is unnecessary, therefore, to suggest that every member of this association present at this meeting should make it his personal and individual business before leaving the city to make certain that his senator and congressman be acquainted with these facts.

On motion by Lewis W. Parker, the tariff committee retired and formulated the following protest that the association might make known its position, before the Democratic caucus of the House of Representatives committed the Democratic congressmen to the support of the measure. This protest was personally presented by the president and secretary of the association after it was unanimously adopted by that body:

Hon. A. Mitchell Palmer, Chairman of Democratic Caucus, House of Representatives, Washington.

Dear Sir: At the annual meeting of the American Cotton Manufacturers' Association, held this day, a committee was appointed to present to the Democratic members of the

House of Representatives, a protest on behalf of the cotton manufacturers of the United States against the rates proposed in the bill known as "H. R. 10," introduced on April 7, 1913, by Hon. O. W. Underwood, and referred to the Committee on Ways and Means.

This association begs to present to your body a resolution adopted by it at its meeting held in April, 1912, which resolution reads as follows:

"That this association records itself as favoring such reasonable revision of the cotton schedule, based upon differences in cost of production and other conditions, at home and abroad, as shall be consistent with the raising of revenue and the conservation of our home markets."

At a subsequent meeting of the tariff committee appointed by this association the following resolution was also adopted:

"We favor the reasonable revision of the cotton schedule based upon figures at which importations are actually being made and can be made as shown by the comparative manufacturers' selling price at home and abroad, as shall be consistent with the raising of revenue and conservation of our home markets."

Acting upon this resolution, the tariff committee at public hearings before the Ways and Means Committee presented from time to time statements in which this association with frankness and at length gave information with regard to conditions affecting the industry and suggested such reductions as in the judgment of the association could be consistently made without injury to the domestic industry of cotton manufacturing and at the same time in consistency with the policy of reasonable downward revision and tariff for revenue. We recognize the propriety of there being adopted at this time such provision in the tariff as would bring domestic and foreign manufacturers into competitive relation. To the best of our belief the schedules suggested by this association to the Ways and Means Committee contained the lowest rates which could be in reason adopted without danger of injury to the industry of cotton manufactures in this country.

We recognize of course that any suggestions made by ourselves are necessarily addressed to the discretion of the honorable committee charged with the consideration of the subject, and we can only say that we have with perfect frankness presented to the committee all information bearing upon the subject which could be obtained by us. We have not asked the committee to accept our unconfirmed statements upon these subjects, but we have in every instance referred the committee to the findings of the tariff board confirming and proving the correctness of the statements made by ourselves to the committee. In addition we supplied the committee with other authoritative data fully confirming the statements of the representatives of the association.

It is therefore with the greatest regret and consternation that we have seen the publication of rates on cotton products recommended by the Ways and Means Committee. In all sincerity we state to your honorable body that if the rates thus suggested are made effective we believe the injury to our industry will be unparalleled. We earnestly enter a protest against the suggested rates and state the positive conviction on our part that the effect of these rates will be to transfer a far larger proportion of cotton manufacturing from the United States to foreign fields, where cheaper labor and other favorable conditions obtain than the Ways and Means committee can have any conception of.

In an absolute conviction of the truth of our statements we appeal to your body not to make reduction in the rates as drastic as presented in the bill referred to and could conclude with the statement that if the bill becomes enacted into law a condition of depression will follow in the industry of cotton manufacturing, which will in our judgment be appalling. Cotton manufacturing is an industry confined not to one community, but distributed throughout a large portion of our country, in portions of which it is the chief industry. It is an industry in which hundreds of thousands of employes are engaged, in which there are many plants with many thousands of stockholders.

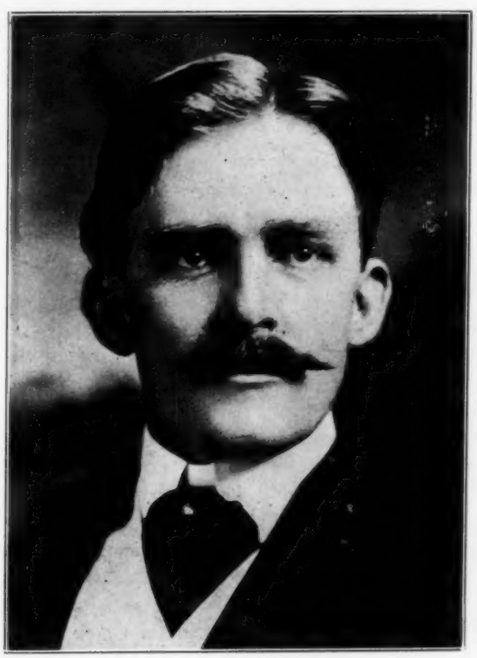
There is absolutely an untrammeled competition between manufacturing plants in the cotton industry, so that there is no condition presented of a monopolistic industry whose control needs in any sense to be broken.

In these views we respectfully present our earnest request that further consideration be given to the cotton schedule in the bill referred to. Very respectfully,

American Cotton Manufacturers' Association.

C. B. Bryant, Secretary. W. A. Erwin, President.

The next paper to be read was entitled, "Commercial Agents of the Bureau of Foreign and Domestic Commerce,"



A. H. BALDWIN.

by A. H. Baldwin, chief of the bureau. Mr. Baldwin spoke as follows:

The work of the Bureau of Foreign and Domestic Commerce of the Department of Commerce must be already fairly well known to most of you through the publicity which has been given to it in your trade journals and also through the publicity which the bureau itself is constantly striving to secure through its own periodicals and bulletins.

With the termination of the work of the Tariff Board last year there were assigned to the Bureau of Foreign and Domestic Commerce certain duties very closely related to the work of investigation carried on by that board, and it may be that in the future very important service in the field of research for the illumination of the subject of tariff

charges may occupy a much larger share of the interest of this bureau. Such work will direct further special attention to the importance and value of the field service of the office, or its corps of commercial agents about whom I will speak very briefly today. This field service has now been carried on, first by the Bureau of Manufactures, and now by the new office, since the year 1905. The promotion of commerce, which is broadly the duty of the Bureau of Foreign and Domestic Commerce, implies the collection of useful facts about trade, both foreign and domestic, by any methods that promise the successful accomplishment of this purpose. The collection of general facts and the record of the current history of trade, especially in the field of foreign commerce, is to a large extent the work of the consular officers of the Department of State. These officers, under the terms of the existing law, are required to report on commercial matters whenever requested to do so by the secretary of commerce, and this service is admirably performed by the consuls. These officers, however, from the exigencies of their work, their close confinement to their posts and the demands upon them in connection with their other duties, are unable to take time to carry their trade investigations very far, and naturally in technical matters where special training is required it is not to be expected that they can render expert service.

It is at this point in the development of export trade that the Commercial Agent steps in and supplements the work of the consuls by detailed investigations of a character which he is equipped to perform. Effort has been made to secure men for this work whose training is recognized by their associates as adequate to equip them to render useful service. In studies for the benefit of the trade in which you are especially interested the bureau has had almost continuously since the first appointment of commercial agents one or more men traveling in the various foreign countries observing and collecting facts that might be of service in the extension of the export trade in cotton textiles. There is scarcely a country in the world that these men have not visited during the progress of this work. A list of the titles of the reports of these commercial agents on this subject will indicate the range of their travels. For example, we have pamphlets on cotton fabrics in British India and the Philippines; cotton textile trade in Turkey, Greece and Italy, in Middle Europe; in Latin-America; in Spain and Portugal; in Russia, Egypt, China, and so on. At the present moment we have two men, whom most of you know by reputation, engaged on this work. They are Ralph M. Odell, who is now in Africa actively pursuing his investigations, and W. A. Graham Clark, who has recently completed careful studies in Canada, and who is now in Manchester, England, where he is in an admirable location, of course, to report on the trend of important matters in this trade, as that city is recognized as the center for the whole world in this field.

Not only do these men collect facts and figures, but they also obtain samples of goods which may command a ready sale in foreign countries and these samples are sent at frequent intervals to Washington. The bureau has developed a practice of sending these samples around the country for the information of our cotton textile manufacturers.

The reports which our commercial agents make to us are usually printed in the form of special bulletins covering a single country or district, although sometimes we use them in the Daily Consular and Trade Reports, or at times we send out short items in the form of special letters or confidential circulars transmitted direct to the manufacturers and exporters of these products. The service is supported by annual appropriations which have ranged from $30,000 to $60,000 a year. The sum available for the coming fiscal year of 1914 is $60,000.

One factor to which I might direct attention here, a factor which has impressed those of us closely interested in the work, is a more or less evident indifference of some of our exporters to this service. I feel that we are justified in expecting, and I know that we would welcome, a more sympathetic attitude toward it, a more positive interest in it, and a greater use of the information which is collected at a cost of so much valuable effort. I am well aware of the conditions under which your products are usually sold abroad, and I understand that your local and domestic interests are such that you naturally feel that you have not time to study the details of this foreign trade, but I am convinced that it is a mistake to neglect this important branch of our commerce and to permit our agents to monopolize the knowledge in regard to it. I wish to urge seriously that the members of this association study carefully the organization which is maintained by the United States government in your interests, as I know that with a knowledge of it the work will receive your more positive support and encouragement. It seems certain that in the development of our foreign trade abroad in such manufactures as those in which you are specially interested we shall need all the legitimate assistance of this kind that may be afforded in order that we may not fall behind in comparison with other important nations manufacturing cotton textile fabrics. Our foreign trade will always be an important factor and it is likely that its relative importance will be greatly increased in the near future. All enterprising manufacturers should equip themselves with a broad, definite knowledge of the factors in this foreign trade, and it is in that field that this service of which I speak is of very definite importance, and I recommend it to your serious attention.

Next in order was the report of Lewis W. Parker, chairman of the Committee on Cotton Exchanges, who stated that during the past year the committee had not been able to accomplish much toward remedying the evils complained of in connection with the cotton exchanges. However, the New York Cotton Exchange some time since made provision for an additional revision with regard to differences in grades to be made in February of each year. "This provision became effective during the past February, and we regard it as beneficial, though not in our judgment sufficient to meet the conditions.

"During the past several months the disparity between the ruling prices on cotton exchanges and prices charged by the dealer and consumer for cotton of good spinning value has been most marked. This disparity has had the effect of rendering of little value the use of exchanges as a hedge.

"Your committee realizes that there is in the trade an important place for the exchanges to occupy and can only again express regret that this important position is not occupied by them; certainly in the case of the New York Cotton Exchange. It has a splendid opportunity to be of great value to both producers and consumers, and it is with regret that your committee feels that the members of the exchange do not show an appreciation of their position in the trade.

"Whilst the producer is to be congratulated upon the fact that in a great measure he has proven sufficiently in-

dependent of the exchanges as to obtain a fair price for his commodity, notwithstanding the depressing effect of the rules thereof, nevertheless, the loss to the producer in our judgment in the past several months has been great, as the results of the depressing effect of these exchanges, and particularly the New York Cotton Exchange; for it must be admitted that the New York Cotton Exchange has probably an effect on prices, greater than that of any other exchange.

"Your committee feels that it is advisable for this association to continue its efforts to remedy the conditions existing. Your committee feels that it is particularly important that cooperation be had with the members of the exchanges looking forward to the adoption of uniform grades, and your committee recommends that this association, through the proper committee, join with the exchanges in suggestions for legislative action, which may be necessary to amend the existing legislation on this subject."

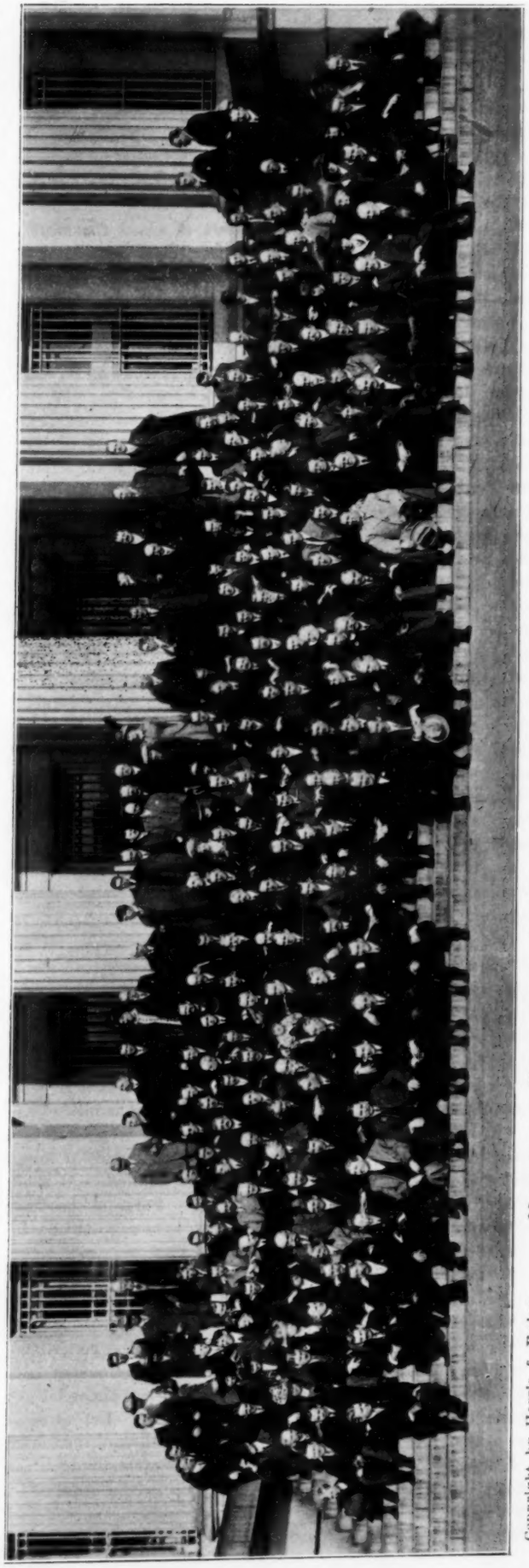
At the request of President Erwin, President Edwin Farnum Green, of the National Association of Cotton Manufacturers, was escorted to the platform, where he spoke briefly on the necessity of cooperation between the two associations. He was followed by George W. Neville, president of the New York Cotton Exchange, who described some experiments recently made to determine the relative spinning values of various grades of cotton lower than "middling," in an effort to obtain a price constant to be used in figuring allowances for off grades. This subject provoked considerable discussion among the members, which was concluded by Lewis W. Parker with a word of warning not to let exchange representatives befog the issue by introducing a method by which they could continue to deliver low grades of cotton on contracts. The session then adjourned.

At 3:30 o'clock on Tuesday afternoon the majority of the members and guests repaired to the steps of the treasury building, facing the White House, where a photograph was made, which is reproduced elsewhere. At 4 o'clock the members and guests were received in the east room at the White House by President and Mrs. Wilson.

President W. A. Erwin tendered the annual banquet to the board of governors and past presidents of the association at the New Willard at 7 o'clock Tuesday night. Several other invited guests also being present.

WEDNESDAY'S SESSION.

It was a little after 10 o'clock Wednesday morning when President Erwin rapped for order and introduced Hon. William C. Redfield, secretary of the Department of Commerce, to the members of the association. Secretary Redfield prefaced his prepared address by a statement to the effect that while they seemed to be interested in the tariff, he had not asked what the tariff rates on textiles were, and he did not care what they were. He said he objected to the protective principle on the moral side as debauching self respect and because it was a doctrine of industrial cowardice. He called attention to the fact that American manufacturers of cotton goods, with the highest paid labor in its class in the world, were greatly feared by the cotton manufacturing interests of India, who dreaded the competition although their rate of wages was much lower, Indian labor being paid from 18 to 30 cents a day. He outlined many personal experiences in meeting foreign competition in the export of machinery and engines, and concluded his introductory remarks by stating that it was high time for the American manufacturers to show confidence in themselves and in their ability. That the payroll should be considered as an investment and the American workingman recognided as be-



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ing as good a fellow as any in the world. Secretary Redfield then took up his prepared address and continued in part, as follows:

It is a privilege to lay before a body of business men the work of the Department of Commerce, and to offer certain suggestions respecting an expansion of a portion of the work of the department which it is hoped may favorably affect our general foreign trade. A few days ago I had the privilege of placing before the Chamber of Commerce of the United States the outline of plans for more thoroughly developing our commercial touch with other great nations. The ideas that I have in mind are suggestions of Mr. Baldwin, the present chief of the Bureau of Foreign and Domestic Commerce, and they seem to me to contain much that my former experience as a manufacturer tells me is needed to properly represent us in the foreign field.

We have the Consular Service scattered all over the earth, and greatly improved in the last few years in its efficiency. Every one who has read the Daily Consular and Trade Reports knows that they have practical value. It is remarkable that this work should be so well done, and that it should be increasing in its practical value, when we consider how many other matters the consuls have under their care. In addition to the limitations which their numerous duties place upon the consuls, they are also limited by the fact that their jurisdiction—or perhaps we would better say their opportunity—is strictly local. They are not supposed to travel in the countries where they live. Their outlook is in a large measure confined to the things which happen at or near, or within the influence of, their place of residence. They must keep office hours. They can not take time free from other duties to make detached and absorbing investigations. They must be considered, therefore, as a local, not as a general, influence. One might fairly expect to learn from the consul at Marseilles much about the commerce of that port, but it would hardly be fair to expect from that official a thorough research into the industries and commerce of France.

As opposed to this local and almost stationary force, the Department of Commerce, through its Bureau of Foreign and Domestic Commerce, is represented by what are known as commercial agents. Here we have the entire absence of the local view, or even of the national view, for the scope of these agents is such that their inquiries are supposed to include the whole world, so far as it relates to the development of the subjects they have in hand.

It will doubtless be evident to you that between these two functions, the general one and the particular one, there is a third function which remains unfilled, and it is concerning that I desire to speak now. Perhaps the best means of describing the commercial gap is to suggest how it seems possible to fill it.

In our leading embassies are officers of the army and navy, called military and naval attaches. They are accredited by the Department of State to the respective nations, and their purpose is the study of the conditions in other nations within the lines of their professions. Would it not be possible to add what we may call a commercial attache in, say, six or seven of our embassies? Let us suppose that this commercial attache was a well equipped man of business, who had no duties save that of studying carefully industrial and commercial subjects in the country to which he was accredited. His scope would be as wide as that of the nation in which he resided. His service would be continuously and only that of studying carefully the commercial development and progress of the people among whom he lived. He could be an efficient factor in making clear to them American industrial and commercial interests, and in likewise making plain to us the similar interests in his foreign field. Such a man would have to be one of business experience. He should speak the language of the country to which he goes, or a language which is widely current there, as, for example, the French or German languages in Russia. It would take some months, perhaps a year, for him to become sufficiently familiar with his great subject to make his reports of serious value, but after that time such a man, doing nothing else, devoting himself to his theme with the privilege—indeed, the duty—of traveling within the nation to which he was sent living in the very middle of his subject, so to speak, should be able to throw a flood of light not only upon the commerce and industries of that particular people, but upon those of the other nations to which that people were selling and shipping. For example, what clearer way could there be to learn of certain phases of South American commerce than to know thoroughly well how the great nations of Europe were dealing with that commerce? If I grasp at all clearly the possible functions of the supposed officer whose duties I am discussing, he would be able to co-ordinate the work that the consuls now do, and make a unified whole out of what is now necessarily a group of unrelated parts. Such an officer would be in touch with the various consuls in the ports of the nation where he lived—not as replacing them, but as supporting and correlating them. In like manner the work of the commercial agents would be supplemented and unified by such an organization, and the result would seem to be probable that we should get no longer monographs on special themes, and reports from diverse localities, but while these continue we should also get the mature and well digested results of a continued study which would take all these into account.

Passing from this to another duty, which I hope the department of commerce may undertake, let me suggest a new subject of inquiry for the Bureau of Corporations. The air has been full for years past of discussion of the trusts. We have looked at them from the point of view of their political, financial and social results. But there is one phase, and to my thinking one of the chief phases, of this study which has been almost omitted. It is alleged upon the one hand that the trusts are necessary for our industrial efficiency. There has been discussion altogether too brief, on the other hand, as to whether the trusts are as a matter of fact industrially efficient or not. A good many years ago the late Edward M. Shepard said to me that he believed the trust form of organization carried within itself the seeds of its own decay, that its economies were more apparent than real, and that the serious difficulty of obtaining the men who could manage efficiently, with firm grasp and thorough control, these great organizations, would result itself in ultimate segregation. Mr. Shepard was a man who knew his subject well, and whose views were ordinarily based upon careful thought. The point I now bring before you is this: That we do not know, from any mature and exact study, whether the so-called trust form of organization is industrially efficient or whether it is not. We are dealing with it in a sense as a national menace, whereas the fact may be that it menaces chiefly itself and the people who are interested in its securities.

Whether this is true or not, I do not pretend to say.

It does seem to be sufficiently important to warrant a thorough study of the matter. I venture to hope that the Bureau of Corporations may be able to make from the industrial and production side, from the basis of mere manufacturing efficiency, a thorough study of this great subject, in order that we may learn what the real facts are and what conclusions are properly to be drawn from them. Certain economies are obvious in the formation of a trust. Are or are not these economies superficial, in the sense that the same formation of a trust brings into action certain less visible but more potent elements that take away from economy? Is it or is it not true that the major motive in the forming of the trust is the profits of the promoters that organize it? Are the economies of centralized organization, of reduced competitive outlays, more than balanced by certain economic weaknesses which do not arise in the smaller concerns? There is a point as manufacturers well know, up to which, as product increases in quantity, cost is reduced, by reason of the distribution of the burden charge over a greater output and its consequent reduction per unit of that output. There seems to come a point where this process stops and beyond which the increase of output is done at an increasing expense. This, of course, varies under different conditions, but there is what seems to be the shadow of a law here which should be more thoroughly understood. Is it practically possible for men to guide with equal individual efficiency fifteen thousand men, five hundred men, and fifty men? Is there a point where the nerves and fibers of the industrial organization required to handle the larger force become so complex and delicate that the frictional transmission, so to speak, of the will and thought of the head becomes so great that it is weakened or lost? This subject has never been studied. We know, of course, that many of the trusts have ceased to be. They have commercially failed. We know that others are not paying profits upon their securities at all commensurate with those earned by smaller private concerns. We hear that the personal relation between master and men is lost; that sometimes the separate units forming the trust operate on a somewhat individual basis too little related to the policy of the central office. What the precise facts are, we do not know. Our knowledge of them is quite superficial. They need to be thoroughly and exhaustively worked out; for we may come to find that the remorseless law of economics is working its way irrespective of legislation, and that the light of economic truth, once found and fully turned upon the subject, may make clear a way which to many has seemed rough and hazardous.

The next address on the program was "Methods of Compiling Statistics of Production, Consumption and Stocks of Cotton," by W. M. Steuart, chief statistician for the Bureau of Census. Mr. Steuart said, in part:

The census bureau has three distinct lines of inquiry concerning cotton. The first, and the oldest, is the report of acreage and production, collected in connection with the census of agriculture.

The second, and the next to the oldest, is the report of manufacturers collected every fifth year.

The third, and latest, are the reports of ginnings, consumption, stocks, spindles, imports and exports, as provided for in the Act of July 22, 1912.

While the importance of information concerning the actual quantity of cotton ginned was appreciated and several attempts were made to collect it, the Act of Congress approved July 22, 1912, codified the prior enactments relating to cotton statistics and further extended the scope of the bureau's activity. Its principal features are:

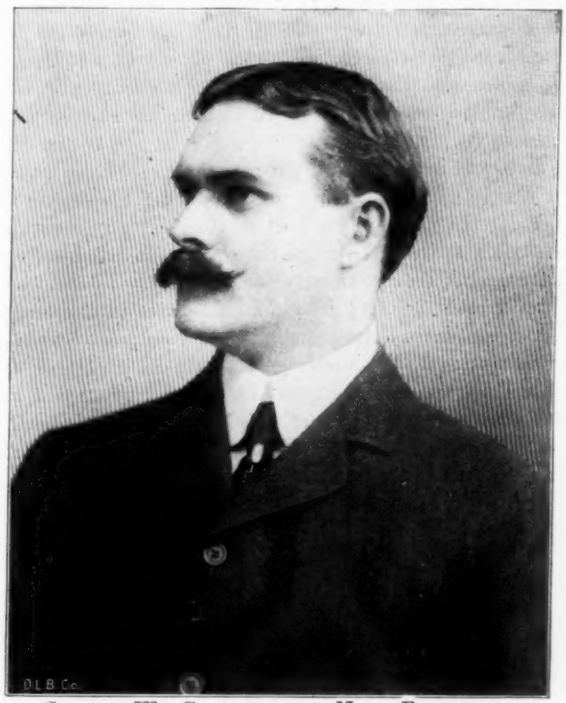
First. There shall be ten reports of the quantity of cotton ginned to specified dates during each ginning season.

Second. There shall be monthly reports of the quantity of cotton consumed, cotton on hand, active cotton-consuming spindles, quantity of cotton imported and exported.

Third. Each report of the quantity of cotton ginned shall carry with it the latest available statistics concerning the consumption, stocks, spindles, imports and exports.

Fourth. That all publications containing statistics of cotton shall be mailed to all cotton ginners, cotton manufacturers and cotton warehousemen, and to all daily newspapers in the United States.

Fifth. That all of the information furnished by any individual establishment shall be treated as confidential and used only for the statistical purpose for which it was supplied.



STUART W. CRAMER, THE NEW PRESIDENT.

Sixth. Obligation of establishments to furnish the statistics and penalties for refusal to do so.

Seventh. The compilation of data concerning the production, consumption, stocks, and spindles in foreign countries.

There are 745 special agents now employed to collect cotton statistics and, as a rule, each agent attends to the work in a single county. To collect the statistics we start with the ginnery and find that there were 29,116 on the list for the season of 1912-13. Of this number 25,116 had ginned some cotton from the crop of 1912 prior to January 16, 1913. Although a few additional ginneries will be operated after this date, this is about the number active at some time during the ginning season, the remainder, or 4,000, were idle during the entire season.

The canvass begins and ends on the same day in all districts. As a rule, the agents are allowed one week in which to secure the reports from all the ginneries in their districts, and they are required to add the number of bales

for each ginnery so as to obtain the total for the district, and to send this total by telegraph, the message being filed in the telegraph office by not later than 6:00 p. m. on the date set for the canvass to close. These telegraph summaries are tabluated in the office and the results published at 10:00 a. m. on the day following that upon which the canvass closes. These reports being based on the telegrams from more than 700 agents may contain errors or omissions and, as they are subject to correction, they are designated as "preliminary."

The individual reports of the ginners are mailed by the agents to the office immediately after or at the same time of sending the telegram. Upon their receipt at the office in Washington, the number of bales of cotton reported on each as having been ginned is added and the result compared with the agent's telegram. It is the practice to give in each report the corrected total for the next preceding report, thus the report of September 25 shows that the report for September 1 was 1,009 bales less than the correct total.

As about 30,000 ginners make individual reports ten times during each ginning season, there are nearly 300,000 of these card reports received at the office. In addition to being added and the totals checked with the agents' telegrams for each report, these card returns are carefully examined to see that no ginner has reported less cotton ginned than was returned at a previous report. Each report must carry the total amount ginned during the season up to the date to which the report relates. If any errors of this character are discovered, they are considered serious, and the agents are apt to suffer accordingly.

The average ginnery is not an extensive establishment, and a considerable number have only incomplete records of their operations. To encourage them to keep records and lead to more accurate statistics, the Bureau of Census distributes gratuitously a Ginner's Record Book. This book is made of strong paper, has a good, serviceable binding, and a string to hang it up with. There were about 10,000 copies of this book distributed during the season of 1912-13, and the number of requests for it is increasing.

As a final check on the agent's work, an entirely independent call is made by the bureau on each ginner to report the total number of bales ginned by him. This call is sent by mail about March 10, of each year. In response to this request, the ginners report directly to the office.

The counties in which agents are employed to collect these statistics cover practically all in which cotton is grown. There are, however, about 200 active ginneries located in counties in which there is so little cotton that it would not be practicable to employ a person to collect the data. The returns for these ginneries are therefore secured by mail. For the crop of 1911 there were only 80,614 bales of cotton ginned in these counties, or about one-half of one per cent of the crop, so any error in the figures for these counties could have no appreciable effect on the aggregate.

In addition to the production of cotton as obtained from the ginners, there are about 900 establishments which delint cotton seed, thereby obtaining a short fiber called linters. This fiber is employed as a substitute for cotton in many lines of manufacture in which a better grade of cotton would otherwise have to be used. It is consumed principally in the manufacture of batts, felts and cheap yarns. It is therefore necessary to obtain data of this cotton and statistics of this are secured twice during the season, January 1 and March 1. They are reported on a card schedule.

To collect the monthly statistics of the consumption and stocks of cotton it is necessary to secure each month reports from approximately 2,100 establishments that consume raw cotton or linters and 2,600 independent warehouses, compresses and other public storage places. Of the former about 1,125 are equipped with spindles designed to spin cotton, while a number of the remainder spin the fiber mixed with wool in the manufacture of merino yarn. The establishments for which the statistics are collected include not only the cotton mills, but woolen and worsted mills and hosiery and knit goods factories in which raw cotton is used as a material, felting, batting, mattress, and bedding factories, establishments manufacturing absorbent cotton, and, in fact, every place in which raw cotton is used as a material. Each of these makes a monthly report on a card schedule.

To summarize, there are 36,000 establishments that furnish information of some character for these various reports on cotton, and there are more than 350,000 separate returns received by the office during the year. These must all be checked, examined, tabulated, and the results published by fixed dates, which follow closely the dates to which the reports relate. The magnitude of the undertaking, the amount of detail involved, and the rapidity with which the work must be done can hardly be appreciated by any one who has had no practical experience in it.

These statistics are distributed by 27 distinct publications issued during the year:

Ten preliminary reports showing the quantity of cotton ginned to specified dates.

Twelve preliminary reports showing the quantity of cotton consumed, imported, exported, and on hand, and the number of active consuming cotton spindles, relating to the calendar months.

Two preliminary reports on the quantity of cotton seed crushed and of linters obtained.

A pamphlet showing the quantity of cotton ginned prior to December 13, by counties.

An annual report on the production of cotton, which contains information regarding the production in foreign countries.

An annual report on the supply and distribution of cotton, which also contains some information regarding the quantity of cotton consumed and the number of cotton spindles in foreign countries.

The prompt distribution of the information is effected by giving the reports to the Associated Press, representatives of cotton exchanges, telegraph companies, and all newspapers promptly at 10 a. m. on the morning of the issue. The postal cards carrying the statistics are addressed on the addressing machine from the stenciled mailing list for cotton publications and sent to the printing office in advance of the day of issuing the report. At the time the report is made public a copy is sent the printer. It is immediately printed on the pre-addressed cards and sent directly to the postoffice, thus distributing the information with the greatest dispatch.

"The Value of Accurate Testing in the Cotton Industry," was the title of a very interesting paper prepared by D. E. Douty, manager of the New York Conditioning & Testing Co. Dr. Douty spoke in part, as follows:

In considering the cost of a material to be purchased or used by the pound we are apt to consider the price per pound, and make decision between a number of offers for furnishing the materials primarily upon the quoted rate,

leaving as secondary considerations such questions as quality, methods of packing, amount of waste, state of the material as delivered, etc.

Every contract or bargain for a market transaction contains specifications defining the qualities of the material which is the object of the transaction. Some of the large associations have devoted much time to the preparation and issue for the assistance of their members and the public, of standard specifications. The textile industry, one of the largest of our country, coming directly in touch with every man, woman and child, has lagged far behind most of the other industries in the standardization and enforcement of contracts and specifications.

In the cotton industry there are definite qualities which can be made the basis of standard specifications and which can be accurately determined by properly devised methods of testing.

In the raw cotton there is the grade, the staple, the moisture content, method of packing, etc.; in the yarn there is the oil, the moisture, the twist, count, tensile strength, elasticity, uniformity, etc., and in the finished fabric; the yarn with its properties as above, the weave and threads per inch, the tensile strength, sizing material and color.

In the discussion of the value of accurate tests of these qualities it becomes necessary for me to limit myself, and I will therefore consider the determination of moisture in raw cotton and yarn, and the effect which the moisture content has upon the count and tensile strength.

It is a well known fact that all textile fibers vary in the amount of moisture they contain with the amount of water vapor present suspended in the surrounding air. The presence of moisture as vapor in a given space is independent of the presence or absence of air in the same space, and we should, therefore, not speak, as many do, of the weight of water vapor in a cubic foot of saturated air "but the" weight of a cubic foot of saturated water vapor.

Water vapor in a given space is saturated when the addition of further vapor would cause condensation into drops and the formation of dew. The amount of saturated water vapor which can exist in a given space depends upon its temperature. Table I gives the amount in grains at each 10 degrees (F) between 20 degrees below zero and 110 degrees which exist in a cubic foot at saturation.

TABLE I.

Absolute Humidity of Cubic Foot Saturated Water Vapor.

Temp. Deg. F.	Wt. Grains	Temp. Deg. F.	Wt. Grains
—20	0.166	50	4.076
0	0.481	70	7.980
10	0.776	80	10.934
—10	0.285	60	5.745
20	1.235	90	14.79
30	1.935	100	19.766
40	2.849	110	26.112

The actual amount of water vapor present at any time expressed in some unit of weight or measure is called the absolute humidity.

If the actual amount is less than the amount necessary to saturate the vapor at the existing temperature, the percentage that it is of the saturation amount is called the relative humidity. For example, the absolute amount of saturated water in a cubic foot at 70 degrees (F) is 7.98 grains. If we had a cubic foot of water vapor in which only 3.99 grains of water was suspended there would be only half enough water to produce saturated vapor at that temperature and we would say that the relative humidity was 50 per cent. If 5.98 grains, ¾ of 7.98 of water were present in the cubic foot, the relative humidity would be 75 per cent.

It is customary to express the moisture condition of the atmosphere in terms of *relative humidity* because it is much easier and more convenient to determine the relative humidity at any time. The amount of moisture present in cotton fiber at any given temperature whether in the raw state or as yarn depends upon the relative humidity of the surrounding water vapor.

Raw cotton or cotton yarn may be made absolutely dry by putting it in a specially constructed oven called a conditioning oven and submitting it for some time to a current of hot air at a temperature of several degrees above the boiling temperature of water. The water contained in the cotton is vaporized and carried off by the current of hot air, only the dry fiber and non-volatile portions remain.

If cotton or cotton yarn dried in this manner is again subjected to the atmosphere containing water vapor it will absorb or regain moisture. The amount absorbed is generally expressed as the percentage it is of the dry weight and is called the *regain* of the material. That is, if 100 pounds of absolutely dry yarn is submitted to an atmosphere containing water vapor and after being allowed to absorb all it will take up at that humidity, weighs 112.5 pounds; the regain is 12.5 per cent.

Table II gives a few values taken from the very excellent work of Mr. Hartshorne and given by him before the 1910 meeting of the National Association of Cotton Manufacturers.

TABLE II.

Cotton Regains at Different Humidities and Temperatures.

Relative Humidity Per cent	Temperature Degrees Fahrenheit 35 Per cent	65 Per cent	85 Per cent	100 Per cent
20	3.96	3.74	8.60	3.50
30	4.98	4.69	4.52	4.42
40	6.00	5.65	5.45	5.30
50	7.16	6.75	6.51	6.33
60	8.57	8.08	7.78	7.57
70	10.31	9.72	9.36	9.11
80	12.42	11.71	11.28	10.98
90	15.23	14.69	14.15	13.77
100	22.07	20.80	20.03	19.50

You will note that a relative humidity of 60 per cent at 65 degrees (F) the regain is approximately 8 per cent. This humidity condition is somewhat below the yearly average condition in Europe and hence the European trade has adopted 8½ per cent as the standard regain for cotton. Those who have given the matter careful consideration in this country are generally of the opinion that 7½ per cent regain would be a more equitable standard for America.

What value to the cotton manufacturer is a knowledge of the amount of moisture present in the cotton fiber? How will it assist in the regulation of his business, and how will it affect the quality of his product? I will attempt to answer those questions in terms of that language which is familiar to all of us; money.

If you are a purchaser of raw cotton at the present time, you pay for your material on invoice weight, and the amount of moisture it contains will depend upon its condition at the time of weighing.

Let us go back to the possible condition at the time of baling. The most of the cotton throughout the South is ginned and baled during the months August to December, and its moisture content at that time, allowing that there is no addition of water by actual spraying or other means, will depend upon the weather conditions.

Through the kindness of the United States weather bureau I have obtained the values for the relative humidity and temperature during each day of the year 1912 at a number of the cotton centers of the South. With these values and the cotton regain as determined and given by

Mr. Hartshorne in the paper referred to, I have computed the regain which would have taken place in absolutely dry cotton during each day of the year if exposed to the atmosphere. These values for the months August to December and the month of January, 1913, for Galveston, New Orleans, Mobile and Charleston, are shown graphically in Fig. 2.

The points have been connected by the fine line and the irregularity of this line shows quite clearly the rapidity of variation in the possible regain of the cotton which is ginned and baled during these months.

Taking each ten days of the period and averaging the value we obtain the heavier curve. The heavy dotted line represents the proposed standard regain of 7½ per cent.

Note in every case the small number of points that fall below this line, and the large number of points that during the months of October, November, December and January, rise above 10 per cent.

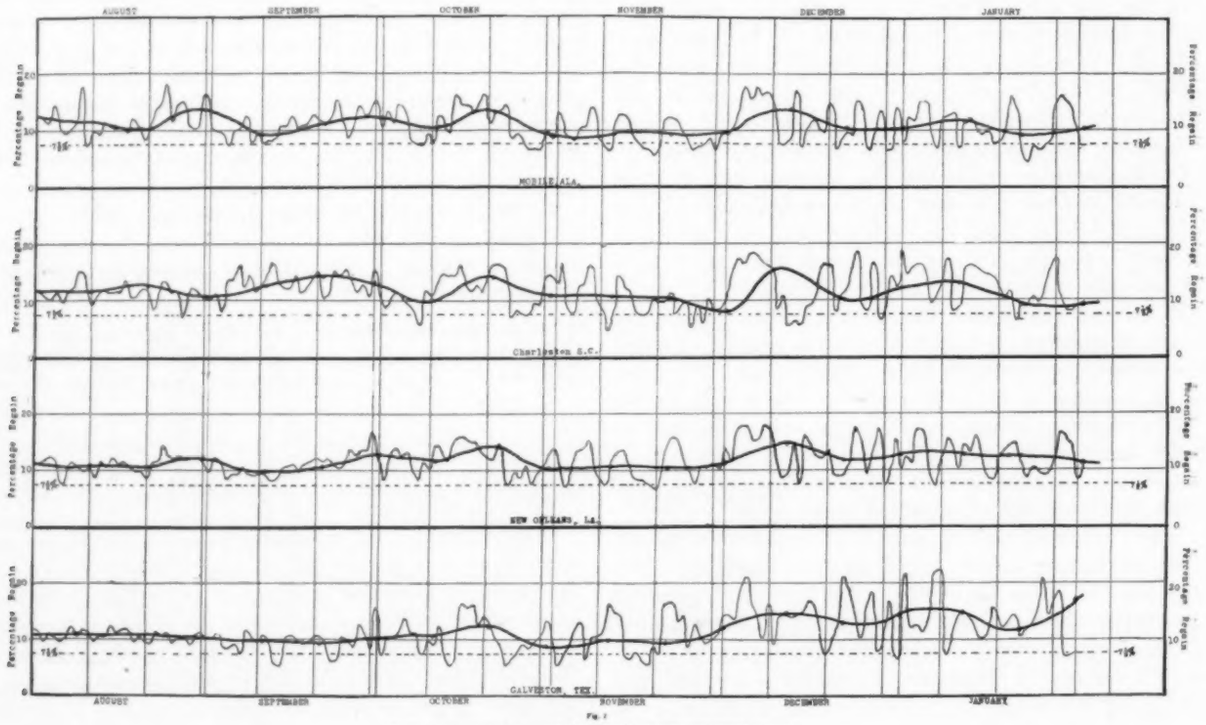


Fig. 2

Cotton regain under atmospheric conditions at GALVESTON, NEW ORLEANS, CHARLESTON, and MOBILE, during August, September, October, November, and December, 1912, and January, 1913

Now, as a purchaser of cotton, at what moisture content has the cotton which you have purchased been baled? Suppose you contract for 100,000 pounds invoice weight of Louisiana cotton in the New Orleans district and it happened to be ginned and baled during the second week in October, when the average regain would have been about 14 per cent or 6½ per cent in excess of the suggested standard regain. The dry weight would have been 87,719.4 pounds and the conditioned weight, using 7½ per cent regain, would have been 94,298 pounds. The invoice weight would therefore include 5,703 pounds excess water which at 12 cents per pound would amount to $684.23.

If you purchase yarn a similar condition is liable to occur; the only difference being that the cost per pound of excess moisture is much higher. Suppose you contract for 100,000 pounds of Southern single warp 20s at 22½ cents and it is spun in a mill where the average humidity is 75 per cent at 70 degrees (F). The regain of the cotton at that condition is 10.5 per cent, or 3 per cent in excess of the proposed standard. If the invoice weight is 100,000 pounds the dry weight would be 94,498 pounds and the conditioned weight (7½ per cent regain) would be 97,285 pounds. The excess moisture over the suggested standard regain of 7½ per cent would be 2,715 pounds, costing 22½ cents per pound, $610.88.

In both of the above cases the excess moisture could have been determined by tests that would have cost for the raw cotton about $60.00 or 0.5 per cent of the total amount of money involved and for the yarn about $80.00 or 0.3 per cent of the total money involved.

You often hear the statement that we do not need to establish in this country a standard moisture content or standard regain upon which to base our transactions in textile materials. That our climate is not as moist as England and the continental countries of Europe. This argument, even if it at some time had a value, must now be abandoned because of the development of artificial humidification. Cotton gins better, spins better, weaves better and sells better when it is moist. The chances are that with the rapid increase in the installation of artificial humidifying apparatus the purchasers of cotton material will purchase an increasing amount of moisture unless they take some steps to agree upon a standard amount, and then test their materials.

The tests which have been made at the Bureau of Standards show very definite effects of the difference of humidity upon the yarn count, tensile strength and elasticity. As the relative humidity changes from 45 per cent to 85 per cent at ordinary room temperature 65-70 degrees (F) the yarn count decreases about 55 per cent. The results of 1150 tests at the Bureau of Standards ranging from 13s to 100s show that between the range of humidity from 45 per cent to 85 per cent at 70 degrees (F) the tensile strength increased 11.18 per cent.

It is possible for an organization like the American Cotton Manufacturers' Association to originate a plan by

which facilities for testing may be available to the members of the association at a reasonable charge, based on the cost. The cotton manufacturers in the Manchester district in England established several years ago the Manchester Testing House and Laboratory, and it has accomplished so much for the cotton manufacturers that it has had a splendid growth and is being rapidly extended.

The National Association of Cotton Manufacturers has had a very active and vigorous committee on the establishment of a conditioning house collecting information throughout the past year under the chairmanship of Arthur T. Bradlee, of William Whitman & Co.

As competition, both domestic and foreign, becomes keener and the margins of profit smaller, the American manufacturer must reduce his costs, if he is to survive. Labor conditions are such that reduction in labor costs may prove not only impossible, but disastrous. We must look to more scientific management, more accurate control of the cost and waste of materials and the improvement of our methods and trade customs. A careful consideration of the elements in our great textile industry convinces me that the greatest source of economic improvement lies in purchase and sale of materials upon definite, uniform, standard specifications; accurate testing to determine compliance with specifications and the conduct of our trade transactions on a truly uniform system of textile weights and measures.

The president then called for informal discussion of textile subjects, and Arnold B. Sanford responded by giving a brief talk on "Japanese Competition," giving facts and figures and calling attention to the danger of importations from Japan.

At the request of many members of the association, Lewis W. Parker gave his views on the new tariff schedule. He scathingly denounced the proposed rates from the floor and said he pitied from the bottom of his heart the small Southern spinners whose very industrial life is imperilled by the proposed schedule. He also stated that "the bill is harsh as to cloth, but more harsh as to yarns. It makes no distinction between single and twisted yarns, carded and combed yarns, or dyed and gray yarns. The bill is discriminatory against Southern-made yarns. There has been free competition on 60 to 100 yarns. There is no appreciation of what it means to Southern yarn spinners. They should work immediately on their representatives on the Ways and Means Committee.

"Southern mills are not able to meet competition on print cloths in other countries. The association was frank with the Ways and Means Committee which discounted its statements. The new rates will force American mills into the manufacture of a single class of goods, plain cloth on automatic looms. The bill hits Southern yarn spinners hardest."

Mr. Parker then presented a statistical report showing that the proposed Underwood rates were more harmful to the industry than had been reported in the analysis prepared by Chairman Underwood. This table was prepared for the tariff committee by R. K. MacLea, formerly consulting expert of the tariff board on cottons. In presenting the table Mr. Parker made it plain that the cuts were not from 42.74 per cent as an average to 26.63 per cent, but much more drastic.

Comparison is made of the present (Payne-Aldrich) law with the new Underwood measure (H. R.—10) applied to One Hundred Tariff Board samples showing the comparison of actual duty against each sample. The samples are arranged in order of yarn content from which an accurate co-efficient comparison is made in a summary at the end.

The co-efficient comparison is the only authoritative way to compare real distribution and averages from the known facts, as established by the tariff board in its investigation of the industry. These figures are taken from the undisputed statistics:

UNDER NO. 20 YARNS FITS IN 49¾ PER CENT OF DISTRIBUTION.

Sample No.	Highest Yarn No.	Payne-Aldrich Per cent		H. R.-10 New Underwood measure Per cent.
1	7	38.33	Par 261	7.50
2	8	46.98	Par 261	7.50
3	11	38.70	Par 261	10.00
4	16	30.00	Par 261	10.00
5	14	27.64	Par 261	10.00
7	16	40.06	Par 261	10.00
8	14	39.68	Par 261	10.00
10	18	45.88	Par 263	25.00
11	14	17.54	Par 261	12.50
62	18	41.68	Par 263	25.00
73	14	23.36	Par 261	12.50
77	14	49.98	Par 261	12.50
78	14	42.50	Par 261	12.50
79	14	39.40	Par 261	12.50
80	18	40.00	Par 272	25.00
		551.73		202.50
Average		36.78		13.50

COMBING OVER AND UNDER NO. 20 AND NOT OVER NO. 40 FITS IN 92¼ PER CENT OF DISTRIBUTION.

Sample No.	Highest Yarn No.	Payne-Aldrich Per cent		H. R.-10 New Underwood measure Per cent.
6	22	29.94	Par 331	12.50
38	24	40.00	Par 272	25.00
51	26	26.70	Par 261	15.00
52	36	36.94	Par 261	15.00
53	28	57.00	Par 261	15.00
55	22	44.19	Par 261	15.00
68	32	39.34	Par 261	15.00
74	24	35.65	Par 261	15.00
76	28	38.34	Par 261	15.00
		348.10		142.50
Average		38.68		15.83

OVER NO. 20 BUT NOT OVER NO. 40 YARNS FITS INTO 42½ PER CENT OF DISTRIBUTION.

Sample No.	Highest Yarn No.	Payne-Aldrich Per cent.		H. R.-10 New Underwood measure Per cent.
9	36	39.68	Par 261	15.00
12	32	50.68	Par 261	15.00
13	30	31.17	Par 261	15.00
14	22	29.29	Par 261	15.00
15	36	49.18	Par 261	15.00
16	40	55.48	Par 261	20.00
22	26	28.30	Par 261	15.00
39	32	33.10	Par 261	15.00
40	36	48.01	Par 261	15.00
41	30	56.22	Par 261	15.00
42	36	33.45	Par 261	15.00
43	30	38.34	Par 261	15.00
44	32	50.88	Par 261	15.00
54	28	32.14	Par 261	15.00
61	24	56.63	Par 263	25.00
63	36	35.18	Par 261	15.00
69	36	46.89	Par 261	15.00
71	30	42.66	Par 261	15.00
72	40	39.94	Par 261	20.00
75	40	35.92	Par 261	20.00
82	30	30.46	Par 261	15.00
83	40	50.28	Par 261	20.00
83	40	50.92	Par 261	20.00
		964.80		380.00
Average		41.95		16.52

OVER NO. 40, WITH SOME YARNS UNDER NO. 40 IN FABRIC FITS IN 7¾ PER CENT OF DISTRIBUTION

Sample No.	Highest Yarn No.	Payne-Aldrich Per cent.		H. R.-10 New Underwood measure Per cent.
23	60	47.29	Par 261	25.00
24	50	44.17	Par 261	22.50
33	50	49.49	Par 261	22.50
64	55	52.14	Par 261	22.50
65	80	53.44	Par 261	25.00
66	90	53.80	Par 261	25.00
67	60	42.28	Par 261	25.00
93	80	50.00	Par 267	35.00
		398.70		202.50
Average		49.83		25.31

OVER NO. 40 YARNS.

Sample No.	Highest Yarn	Payne-Aldrich Per cent	New Underwood Per cent
17	60	58.46	25.00
18	80	44.69	25.00
19	120	42.16	30.00
20	100	47.29	30.00
21	100	44.68	30.00
25	100	55.97	30.00
26	80	37.95	25.00
27	90	45.45	25.00
28	80	61.54	27.00

29	80	51.42	25.00
30	60	69.78	25.00
31	70	65.82	25.00
32	70	60.65	25.00
34	130-2	55.80	30.00
35	120-4	43.93	30.00
36	120-2	47.53	30.00
37	55	60.94	22.50
45	65	64.75	25.00
46	80	52.02	25.00
47	90	57.34	25.00
48	110	58.82	30.00
49	100	55.61	30.00
50	120	.....	30.00
56	70	53.64	25.00
57	120	43.44	30.00
58	80	55.07	25.00
59	50	45.18	22.50
60	85	69.50	25.00
70	45	55.83	20.00
80	55	41.98	22.50
81	50	44.21	22.50
84	80	43.68	25.00
85	55	35.65	22.50
87	60	55.48	25.00
88	60	52.65	25.00
		1,779.00	912.50
Average		52.32	26.07
Recapulation—			
First 47 samples—			
15		351.73	202.50
9		348.10	142.50
23		964.80	380.00
Representing approximately 92¼ per cent of distribution		1,864.63	725.00
Average		39.67	15.42
Balance 43 samples—			
8		398.70	202.50
35		1,779.00	912.50
Total		2,177.70	1,115.00
Average on 7¾ per cent of distribution		50.64	25.93

CO-EFFICIENT COMPARISON.

Payne-Aldrich law, per cent	40.52
New Underwood bill, H. R.-10, per cent	16.23

This almost cuts in half the lowest rates the industry can stand.

President Erwin, as chairman of the Committee on National Council, then made the following report:

The National Council of American Cotton Manufacturers, authorized by concurrent resolutions unanimously adopted by the American Cotton Manufacturers' Association and the National Association of Cotton Manufacturers, shall be selected from the members of the two organizations for the purpose of representing the cotton manufacturing industry of the United States on matters of general importance.

This council shall be composed of eight members, consisting of the president and three members of each association. The president of each association shall in April, 1913, appoint three members of his association whose terms of office shall be for one, two and three years, respectively, and annually thereafter one member from each association shall be appointed by the president for the term of three years, and also three alternates, who are to act only in case of inability of a member to attend a meeting, and these appointments by the president of each association shall be confirmed and ratified by a majority of its board.

In case of the inability of either of the presidents to attend a meeting, the vice-president, in order of seniority of office in that association, shall act in his stead. When a member or alternate cannot attend a meeting, the president of that association may appoint another member of his association pro tem for that meeting only. The secretaries of the two associations shall be permitted to attend the meetings, but not to vote as secretaries.

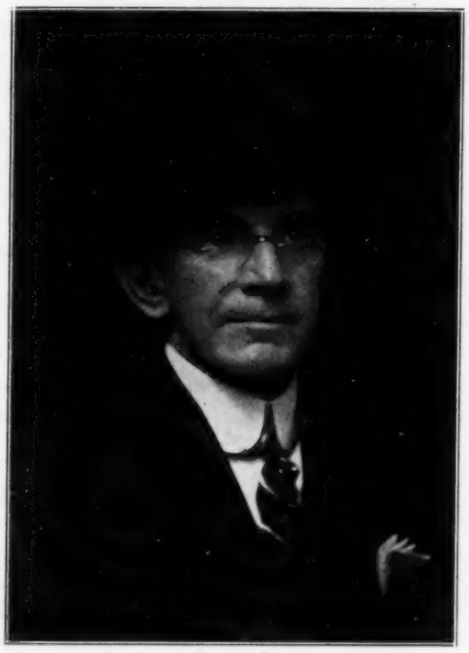
The council shall elect its own chairman and clerk.

The annual meeting shall be held on the first Wednesday in June of each year, at such hour and place as may jointly be determined by the two presidents, and other meetings may be called when deemed necessary by the chairman, or upon the request of three members of the council, but notices for any meeting shall be mailed to each member of the council two weeks in advance, except so far as members may agree to waive notice.

The general expenses of the council shall be paid equally by the two associations.

This council shall have authority to represent the two associations on matters which may come before it, but its action shall be binding on such associations only when at least three representatives of each association favor such action and the council shall not take any action which would impair the respective autonomy of either association.

This report was taken up in the business meeting later and adopted with a slight amendment and President Erwin appointed as the first three members of the National Council in behalf of the American association Cæsar Cone, for one year; L. B. Tyson, for two years, and Ellison A. Smythe, for three years.



Vice-President T. I. Hickman, of Augusta, Ga.

Wednesday night about 300 members and guests attended a complimentary stag theater party and smoker given at a local theater.

THURSDAY'S SESSION.

At the Thursday morning session R. M. Miller, Jr., presented the final report of the tariff committee, which said, in part:

We desire to call special attention to Bulletin No. 6 as not only containing a vast amount of original data, but also as embracing the hearing before the Ways and Means Committee of the House of Representatives on January 22. In it will be seen the tariff rates suggested by our Committee on Cotton Manufactures—Schedule I.

It is with the greatest regret and consternation that we have seen the publication of rates on cotton manufactures in the tariff bill of the Ways and Means Committee. In all sincerity we state to you that if the rates thus suggested are made effective the injury to our industry will be unparalleled, and that a condition of depression will follow in cotton manufacturing which will be appalling.

Next came the report of the statistical secretary, W. J. Thackston, a resume of which follows:

Among the important factors called to your attention last year as effecting conditions connected with the manufacture of cotton, was the substitution of statutory liability for common law liability, and the prediction was then made that this important modification of the phase of personal injury was more than likely to grow. This observation has been fully realized, and it seems, by the experience of the state of Massachusetts, where this statutory liability is practically under the state Bureau of Accidents, to have increased the rate of premium charged by private companies underwriting these lines.

The attention of this membership is especially directed to an important investigation and agitation that is going on in this country, and which had its inception and beginning in the Illinois vice commission. While primarily started for the purpose of ameliorating a great evil, it has, however, taken a turn which is more than likely to effect cotton mill labor. I allude to a minimum wage for women.

It is a matter of historic record that an appeal through the emotions is especially strong, and once obtaining considerable impetus, writes its record large and mostly in red. It is not assumed, or in the least way intimated, that the appeal to the emotions through vice commissions, is likely to lead to instances in this day and time paralleling the Crusade or the French Revolution; but if the preponderance of the movement shifts to the question of a minimum wage for women workers, great hardship is likely to follow, both to the workers and to the mills.

Involved in the question of minimum wages for women workers is the question of the elimination of women workers. It also enters into the question of reward of merit, placing the slow and inefficient on a level with the quick, intelligent and capable worker, killing all incentive for skill and the differentation of personal fitness.

No more splendid basis could be found for flights of political oratory, than in this question of a minimum wage for women workers in our mills, seeking to fix by statute, a standard which if so fixed, would deprive many of their means of earning a living.

Allusion was made in the last report to the intimate relations between profits of home manufacture, and the export of cotton cloths from the United States. This country is making a slight excess of the amount of cotton goods used at home. If this excess or an accumulation occurs, even to the extent of 10 per cent, the price-making of manufactured goods is transferred from the manufacturer to the converters and jobbers.

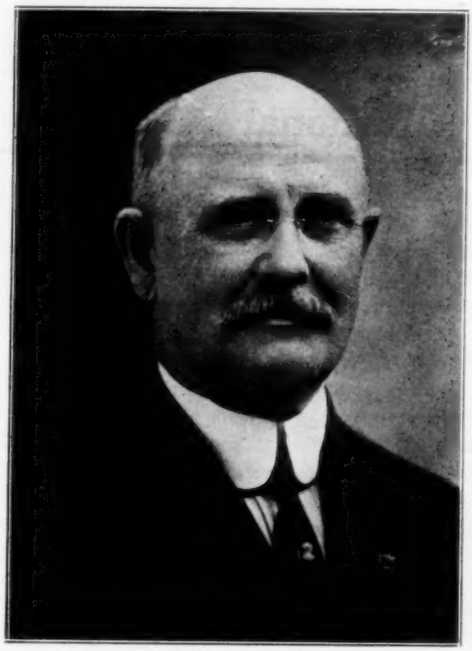
Suppose a converter, jobber, or large garment maker desires to buy five thousand pieces of 80 squares. On inquiring, he finds thirty different manufacturers with small accumulations. He sounds each and every one for a small concession. The weakest manufacturer making 80 squares, if the product is up to the standard, gets the order; and incidentally fixes the price for the stronger, who would not lower his price.

The decrease in exports accumulates products for sale at home, and while at first the constructions forming the accumulations are alone affected, if the falling off of exports continues long enough, all lines will be affected. If any manufacturer doubts this, let him take the exports and chart them for the past ten years; then on the same sheet, chart his earnings, say per spindle, for the same period. The relationship will be absolutely demonstrated. If in addition, he will also chart the price of cotton for the same period, he will be astonished to find how small a factor is the price of cotton in profits, though apparently it is a large one.

For convenience, I will give the exports of cotton piece goods from the United States for the past ten years, in yards, and exports to China for five years:

1902	525,495,309.....	
1903	374,074,192.....	
1904	434,989,686.....	
1905	790,259,024.....	
1906	512,229,720.....	
1907	216,387,642.....	Exports to China.
1908	272,242,179.....	49,876,571
1909	380,521,971.....	139,987,013
1910	295,736,336.....	95,041,155
1911	410,200,201.....	80,769,542
1912	464,253,126.....	108,415,469

A review of the export trade in cotton cloths for the past ten years is gratifying in two respects:



SCOTT MAXWELL, CHAIRMAN OF THE BOARD OF GOVERNORS.

One, the volume of exports is increasing, having been for two years more than fifty million dollars, though in 1904 they were as low as twenty million dollars.

Two, that they are better distributed than ever.

It has not been many years ago that fully 50 per cent of exports was to China alone, and as China is a spasmodic buyer, the fluctuations were great, while now, valuable as is this trade, its loss or deficiency does not put us in the danger line.

To show this violent fluctuation in our trade with China, a glance at the record will be illuminating. In 1905, unbleached cloths were sold to the extent of a little less than 500,000,000 yards. In 1908, the amount was about 34 million yards. As far back as 1903, these exports were something like 280 million yards; while in 1912, the total was nearly 109 million yards. During the last five years, the range has fluctuated from around 50 million yards in 1908, to 140 million yards in 1909.

The British exports to China for the past four years

range around 500 to 600 million yards. This is more in yards than the total export trade in cotton piece goods of this country to the whole world. In round figures, the exports of Great Britain in cotton piece goods to the world, are as follows:

1909, 5,239,456,000; 1910, 5,470,493,000; 1911, 6,136,410,100; 1912, 6,912,629,800.

A study of the export trade of this and other nations, leads to the conclusion that it is in no small degree dependent upon the diplomatic relations, and government influences of this nation; trade follows the flag, as well as the constitution.

Feeling that this question of exports was one of vital interest, I have taken the liberty of asking the new Secretary of Commerce, Hon, Wm. C. Redfield, to sub-divide the monthly statements of exports and give the item of manufactured cotton products as a separate item. If they are followed closely and continue good, there will be found small reason to sell your products at depressed prices, for if not needed today, they will be tomorrow.

The reports of the secretary and treasurer and committee on resolutions were read and approved. The following officers were then elected:

President, Stuart W. Cramer.
Vice-President, T. I. Hickman.
Secretary-Treasurer, C. B. Bryant.

New members on the Board of Governors: Scott Maxwell, George H. Lanier, Fuller E. Callaway, James D. Hammett, A. A. Thompson and Arthur R. Sharpe.

At the close of the business meeting, the convention was adjourned.

Immediately after adjournment, the Board of Governors held a meeting at which Scott Maxwell was elected chairman for the ensuing year. He had just completed a three-year term as a member of this board, and his re-election to a second three-year term is striking evidence of his personal popularity.

Mr. Maxwell is agent for the Indian Head Mills of Alabama and one of the most successful of Southern manufacturers. He came into the South from Maine over 18 years ago, and has worked his way up from overseer to agent. He has always taken an active part in the work of the association and has served as a member of numerous committees.

National Association of Cotton Manufacturers.

The annual convention of the National Association of Cotton Manufacturers was held in Huntington Hall, Massachusetts Institute of Technology on the 23rd and 24th of April. The sessions were well attended and much interest shown on the part of the 300 members present.

The Program.

The first session was held on Wednesday morning at 11 A. M. The president gave the call to order. Then came the report of the secretary; the treasurer; the auditor; and the award of the Association Medal. Next came an address by Richard C. Maclaurin, president of the Massachusetts Institute of Technology. Address of welcome to the commonwealth of Massachusetts, by Lieut. Gov. David Walsh. Response to address of welcome, by Frederick B. Macy. President's address by Edwin Farnham Greene. Spinning Values of Different Grades of Cotton, by George W. Neville, President, New York Cotton Exchange. After the adjournment of the morning session the members were requested to wait on the steps of the Institute to be photographed.

The second session was called to order at 2:30 P. M. and after a brief business discussion papers were read as follows: The New Agriculture in the South and Its Relation to the Cotton Spinning Industry, by David R. Coker, Hartsville, S. C. Report of committee on conditioning cotton yarn and cloth, by Arthur T. Bradlee, Chairman. Humidity Effects and Textile Testing, by Walter S. Lewis, Bureau of Standards, Washington, D. C. Tare on Cotton, by Oscar Elsas, Prest. Fulton Bag and Cotton Mills, Atlanta, Ga. Cotton Growing in the Anglo-Egyptian Sudan, by Arno Schmidt, Sec'y International Federation of Master Cotton Spinners' and Manufacturers' Association, Manchester, England. Adjourned.

The third session was held Thursday morning, at 10:30 A. M. The papers read were Co-operation Among Manufacturers, by Charles H. Fish, Boston, Mass. Economy of Superheated Steam, (Illustrated by Stereopticon), by S. R. Rosenzweig, Chief Engineer, Erie City Iron Works, Erie, Pa. Power Matters in Textile Mills, by F. W. Dean, Boston, Mass. Cotton Mill Accounts, by Joel Hunter, C. P. A., Atlanta, Ga. Adjourned.

The fourth session was called to order at 2:30 P. M., and the papers presented were, Wastes in Cotton Manufacture, by William H. Harriss, Treas. Slater Mfg. Co., Pawtucket, R. I. Wastes of Material in the Cotton Manufacture, by Andrew Fisher, Jr., Boston, Mass. Ballot on New Members. Beam Dyeing, the Modern Method, by Edward W. Swift, Pres't Muscogee Manufacturing Company, Columbus, Ga. Dyeing From Different Solvents, by J. Hubner and H. B. Avery, Manchester, England. Election of Officers. Adjourned.

President's Address.

President Edwin Farnham Greene, in delivering his address said, in part:

"Once more we are met together as an association of cotton manufacturers. Since our last meeting in New London in September, nothing of unusual importance has taken place in the industry. It is safe to say that the business of the cotton mills of the country has not improved during the past seven months, and it is on the whole, poor. To be sure, there is no such radical curtailment taking place in this branch of the industry as among the woolen and worsted mills, but even though production and sales are larger the goods have been sold at little or no profit. The temporary prosperity of the coarse goods mills has been more than offset by the lack of business in fine goods. This is not surprising in view of the many uncertainties before us. The most important event to us during the past few months has been the change in the administration with the complete control of Congress passing to the Democratic party. This need not necessarily mean poor business for us nor for the country at large, but such a radical

change is always disturbing, and particularly so when the successful party has been advocating radical changes in the federal statutes.

"We, all of us, whether Democrats or Republicans, feel that the Democratic party has at the present time the opportunity of years to so shape legislation that the business of the country, which after all is the basis of its prosperity, will not be seriously disturbed. In fact, it will only be natural if those who are now in power are more conservative in their plans with the broader knowledge and larger experience which actual contact with these problems brings. Moreover, the dominant party is likely to be the conservative party, feeling the full weight of the responsibility of the nation's progress.

"We are not willing to admit that the textile manufacturers in this country are any less progressive in the true sense, or less interested in the real welfare of the people of this country than are our fellow citizens. Owing to a

PRESIDENT EDWIN FARNHAM GREENE.

combination of most unfortunate circumstances we seem to have been picked out for special attack. There is no question but that progress can be made and is being made along many lines to improve the conditions of the working people, and the textile mills have been leaders in this respect. No industry in this country has on the whole better mills or factories than the textile industry, and no class of operatives work under more favorable conditions than the vast majority of the textile workers, most of whom spend their time in well lighted, and well ventilated rooms, and in most cases amidst more healthy surroundings than their own homes. It is true that there are many exceptions to this general statement, and it is highly possible that our friends who are on the outside can point out many things which can still further be improved, but I wish it distinctly understood that every manufacturer most earnestly desires that the real facts regarding conditions of work and wages be known to the world at large for we have suffered more than we feel we deserve.

"Our wages may seem low to many, but when the character of the operative is considered with reference to what they can earn elsewhere, we shall all undoubtedly come to the conclusion that the textile industry is of very great economic advantage to this country and its people.

"I hope at this time to analyze the character of the working people in our textile establishments, the wages paid and the effect of the tariff on such wages. I cannot, of course, in a few minutes, hope to more than point out some of the facts which I sincerely believe are representative of the whole industry. The statistics are from the Pacific Mills which, as you know, are situated in Lawrence. I do this, first, because I can get at the actual facts and, second, because the people of this country seem to believe that Lawrence is a representative New England textile city. The Pacific Mills is moreover a good source of information for the reason that we have a worsted mill, a cotton mill and a finishing works, comprising, with the exception of silk and jute, almost the whole range of the textile industry, from the raw material to the finished product.

"First, as to the character of the people. For years, hundreds of thousands of foreigners have been streaming into our country, in some single years more than a million, and little thought seems to have been given as to how these people are to be given employment, even in this large country. Most of them are not skilled laborers. At the present time the Pacific Mills are employing in Lawrence more than 7,000 operatives comprising thirty-odd nationalities, fairly well distributed among them all.

"According to statistics gathered by the United States Immigration Committee in May, 1909, when actual returns were made of 4,911 of our operatives, not including office employees, 61 out of every 100 foreign-born could speak, read and write in English, 12 could speak but not read and write, while 39 were wholly ignorant of our language; of this 39, 27 could read and write their native language, but there were 12 who could not. Thus it will be seen that the textile mills of the country give employment to a large number of these immigrants who are frequently illiterate, with no skill and not even natural ability of hand or mind.

He discussed the question of wages and declared that "the cotton mills and woolen mills in this country are the training schools for hundreds of thousands of work people, transforming them from ignorant and clumsy foreigners into skilled, self-respecting, educated Americans.

"I believe it is very generally accepted now that the cotton mills of this country, as a whole, have not made large profits; at least, sufficient authentic information has been brought to the attention of the public to establish this fact. Many failures and reorganizaions in the past ten years testify further to this. No one denies that certain companies, which have been exceptionally well managed over a long period of years, have shown large profits, but this will always be true. If the tariff is reduced to the point that goods can be imported into this country below the cost of manufacturing, either the raw material must be purchased for less, wages reduced or capital go without remuneration, assuming that the mills are now economically and efficiently operated, and the intense domestic competition of years has guaranteed this. The price of cotton is dependent on the law of demand and supply and is beyond our control. In spite of all legislation, capital will not continue in a business which does not give some return. The only chance therefore to meet foreign competition is by reduction in wages, which no one wishes to see. Working people cannot afford it, and the mills do not wish it. I wish it distinctly understood that I am not making any threat that wages will be reduced because I know that manufacturers will resort

to this only at the very last. No one denies that the textile industry is a very vital part of the business of this country, and any injury to the industry cannot but help affecting the welfare of the whole country.

"The industry as a whole is facing this crisis. Some of the manufacturers making coarse goods may feel that because of the fact that a certain small percentage of the coarse goods made in this country is exported that they are free from tariff disturbances. This is not true, for if the fine mills are forced off of the finer grade of goods they must necessarily look for other outlets, and inevitably the industry as a whole will suffer if any particular part suffers. It should therefore be apparent to all that this is the time to get together and work for our common interest. If any one from the attorney-general's office is interested in ascertaining whether a trust or any working agreement exists among the cotton mills, let him come to some one of our meetings where we are trying to secure united action on some vital point. There is probably in this country no industry where there exists more intense competition or a stronger feeling of independence on the part of the individual manufacturers, and yet it is to be hoped that in meeting this coming crisis we will all work in closer harmony so that the enormous advantages of the cotton mills to this country can become widely known, to the end that our home industry may be preserved on a stable and sound basis."

Tariff Resolutions.

The following tariff resolutions were formulated by the resolution committee and unanimously adopted:

Whereas, The members of the National Association of Cotton Manufacturers in annual convention today view with much profound apprehension the rates on cotton manufactures proposed in the new Underwood tariff bill;

Resolved, That the regular order of business be suspended and the following protest be unanimously adopted that the American people and its representatives in Congress shall understand and appreciate the unexpected and unfortunate disturbance threatening one of the greatest American industries—unexpected, for the platform of the Democratic party introducing this measure distinctly and unequivocally pledged itself against anything so drastic; and misleading, for the bill is offered to the American people as competitive and not as one injurious to American industry and to American labor.

Resolved, That it is the sincere and firm conviction of the members of this association that the proposed rates are not only inadequate in many cases as a basis upon which to revise the cotton schedule, but that the classifications are illogical and impractical and surely represent, to say the least, a grave oversight, or lack of appreciation of the manufacturing expense differentiating one class of product from another. It is inconceivable that yarns advanced in manufacture by many difficult and expensive processes should not be entitled to higher rates than single yarns in the gray, and it is even more incomprehensible that the most elaborate and complicated weaves, dyed, bleached or finished, should have only 2½ per cent higher rates than for plain gray cloths of corresponding numbers of yarns.

Resolved, further, That the drastic reductions in cotton manufactures and the raising of the rates upon materials entering into their manufacture, such as indigo and other dyestuffs, is contradictory and imposes an unnecessary expense upon both manufacturer and consumer.

Resolved, further, That the administrative feature of the bill which provides that if any part of the schedule does not result in importations to the extent of 5 per cent, may bring about a further reduction of rate, should carry with it a corresponding provision requiring the raising of rates on such portions where importations exceed that amount.

Resolved, further, That this association records itself as unalterably opposed to ad valorem rates as against specific duties which protect when protection is most needed, which are definite and easy of administration, which offer the only sure method yet devised by any country to prevent undervaluations and fraudulent importations, and which have not only stood the test of fifty years in our customs service, but are based upon the actual description of goods as bought and sold in the markets of the world every day of the year.

Resolved, That the spokesmen for the cotton industry in which is directly concerned the welfare and livelihood of over two million people, not local, but distributed over a large area of the United States, the members of the National Association of Cotton Manufacturers do hereby voice their most emphatic protest against the threatened crippling of this industry in the name of revenue and price regulation when neither can possibly be regarded as the essential features of the bill in its present form, and when there is no need whatsoever for monopolistic curbing, nothing even remotely approaching monopoly existing in this industry; and at a time when it has been suffering for the past three or four years a period of unexampled depression on account of over production with attendant domestic competition in its bitterest and most relentless form.

We urge upon Congress such modification of the bill as will bring it, at least, within the expressed and declared platform upon which the political party in power was elected and charged with the responsibility of this tariff revision.

Be it further resolved, That a copy of the resolutions be sent to the president, the chairman of the Committee on Ways and Means of the House of Representatives, the chairman of the Committee on Finance of the Senate, and to all individual senators and representatives in Congress.

Election of Officers.

The officers elected were as follows:

President—Edwin Farnham Greene.

Vice-Presidents—Albert Green Duncan and George P. Grant, Jr.

Directors for three years—Albert F. Bemis, Russell B. Lowe and R. M. Miller, Jr.

Director for two years—Grosvenor Ely.

REPORT OF COMMITTEE ON CONDITIONING OF COTTON YARN AND CLOTH.

BY ARTHUR T. BRADLEE, CHAIRMAN.

Until recently practically nothing has been done among the cotton trade of this country on this question while practically all the foreign nations have their conditioning houses and rules of trade to which their standard sale notes conform. In this country certain individuals of our association and outside have done considerable personal work and investigation along the general lines which are

dealt with by the so-called conditioning houses. The increased competition of present times and the adoption of the so-called system methods, with their various forms of specifications, make it urgently necessary that the trade be educated as to what can and what cannot be expected in the degree of perfection of textile products:—

First, so that such specifications may be made fair to both the buyer and the seller, and

Second, to establish uniform methods of testing to ascertain whether the specifications have been complied with and to offer a recognized headquarters where impartial tests can be made in accordance with the methods agreed upon.

Within the past few years the United States government at the Bureau of Standards of the Department of Commerce at Washington have made a large number of tests on cotton yarns and fabrics with the idea of establishing their own standards and specifications on which to make government purchases. It seemed very essential that the United States government should adopt no standard that would be inimical to the manufacturer and that the government should, if possible, adopt no standard that did not have the approval of our association. In fact, it seemed wise that we should adopt standards and methods of testing and get their acquiescence to those methods so that their standards and those adopted by the manufacturers should be identical in every way.

At the outset of your committee's work they were provided with the results of tests made by the government but we had no real information as regards the general business working of the large foreign conditioning houses, of which the Manchester Testing House of Manchester, England, probably stands at the head as regards cotton yarn testing, while the Bradford Conditioning House of Bradford, England, holds a similar position as regards woolen and worsted testing.

Finding that the United States government intended to send a representative from the Bureau of Standards to England to investigate the work being done at some of these large testing houses, we arranged with that representative to make certain additional investigations for our committee, largely along the lines of certain questions which we were interested in but which the government did not intend to investigate.

You will note from the statement of Dr. Douty, of the U. S. Conditioning and Testing Co., that in 1911, the laboratories at New York made 34,535 tests and in 1912, 40,958 tests. While this company has been confining its attention practically entirely to silk they are fitted up with apparatus for the testing of cotton yarns and are willing to add whatever additional apparatus is necessary. We undertsand they also are willing to fit up with the necessary machinery for the testing of cotton cloth. They stand ready to make practically any arrangement the association may desire as regards membership on their board, executive committee, etc. The conditioning house is also in a position to make tests on soaps, oils, sizing mixtures, dyestuffs, etc. In fact, on any matters of this sort in which the textile trade are or will be interested. While run with no idea of making money for its stockholders, this conditioning house, as stated by Dr. Douty, is now on a paying basis.

As to the foreign testing houses, you will notice from their reports that they are both more than paying their way and that they are being used more and more each year;—the Manchester Testing House making last year some 80,000 tests and the Bradford Conditioning House about 240,000. The whole question of the conditioning of yarn and the testing of yarn and fabric under standard conditions is becoming more and more urgent in all countries and your committee have received numerous letters from all classes of trade for information and advice along this line.

In considering the question as to the advisability of our association adopting the laboratories of the United States Conditioning and Testing Company as the official laboratories of the association, we have visited their laboratories and have also communicated with Dr. Stratton, director of the Bureau of Standards, to ascertain whether such action on our part would meet with the approval of the United States government and with their cooperation. We have a letter from Dr. Stratton heartily approving of such a move and assuring us of their cooperation.

After examining the whole question it has seemed to your committee best that we should recommend cooperation with the silk manufacturers and adopt their conditioning house with such control and representation as may seem advisable. With the adoption of that testing house by our association, it would be their endeavor to get this same conditioning house adopted as the conditioning house of the American Cotton Manufacturers' Association, the Knit Goods Association and other textile associations of similar nature, so that we would have one headquarters and a uniform method of testing under uniform conditions. With the adoption of the conditioning house we can then adopt such standard contract rules as may seem advisable. The United States Conditioning and Testing Company have adopted a regular contract for silk which is shown in the book of their association.

The yarn contract rules adopted by the Manchester Yarn Contract Conference and approved by representatives of the Manchester Chamber of Commerce, the Oldham Chamber of Commerce, the Rochdale Chamber of Commerce, the Federation of Master Cotton Spinners' Association and the United Cotton Manufacturers' Association are embodied in notes of the Handbook of the Manchester Chamber of Commerce, page No. 91.

With some minor exceptions it would seem that our association and the other associations of this country could adopt practically these same rules, which have stood the test of some sixteen or seventeen years in England and which represent what has proved to be a fair basis for both the buyer and the seller. The adoption of these rules with a tribunal of arbitration, have, in a large way, done away with lawsuits in the English textile trade and have enabled disputes to be settled promptly and satisfactorily without recourse to law. Eventually this association should offer a similar tribunal.

The first step toward the adoption of such rules is the adoption of an official testing house of the association where tests can be made under certain definite lines both by the manufacturers themselves and by the purchasers of their goods.

After looking into the whole matter, therefore, we recommend that prompt action be taken for officially adopting this United States Conditioning and Testing Company as the present official testing house of our association. The adoption of this testing house by our association will go a long way toward its adoption by the other associations and the general standardizing of the whole cotton industry by

uniform methods, under uniform rules and along uniform lines.

COTTON MILL ACCOUNTS.

BY JOEL HUNTER, C. P. A., ATLANTA, GA.

The purpose of accounts is to record financial history. Aside from the statistical value, perhaps the largest measure of usefulness of accounts lies in their freshness. Manifestly it is more interesting to read from the bank account what today's balance is, than what it was two months ago. Correct accounting principles rest upon method. Method is the shortest way to a desired result. System combines methods into a general scheme. Therefore we have this prescription for effectiveness: Today's transactions recorded today, 30 per cent; Method, 40 per cent, and System, 30 per cent, equals 100 per cent of effectiveness.

The best accounting system is that which presents accurate and complete information most frequently and soonest after the actual transactions. Thus an annual financial statement completed ninety days after the balance sheet date is more or less interesting, but viewed as we would regard Confederate money, with thoughtful interest and rather as a semi-modern relic. A system of accounts used by many cotton mills is based upon the pay roll term, using two fortnightly periods as the monthly unit. This plan meets the generally recognized thirty days, or monthly period, as the settling or casting up date. Ledger balances are drawn off and liquidations made with creditors and debtors. As a preliminary to framing the proper financial statements, a trial balance of the separate accounts is extracted from the ledger so as to determine the mechanical accuracy of the clerical work. Inventories have been prepared of all the unused purchases of materials and supplies and of the unsold product, both unfinished and finished; the bookkeeper sets them up in their proper places and proceeds to compile the financial statements. In order that these statements may be easily and promptly gotten up, the records should be maintained in such a manner that this compiling may, as nearly as possible, be merely a work of transcribing. It has been found by experience that it is better to carry the record of business transactions in such a style that the detail necessary for the monthly statement falls into related groups. Then these groups separate themselves into the various unit members of the family of accounts, but with an arrangement susceptible of ready re-assembling.

Accounts naturally fall into four grand divisions. These are asset, liability, expense and earnings. Fine distinctions are drawn and other names are sometimes used such as resources in place of assets and revenue for earnings, or as in the case of a general trader, sales; but the meaning is practically the same, the nomenclature being determined by the nature of the business. Assets are grouped as fixed or capital assets, current assets and deferred assets. Liabilities are divided in the same way. The expense accounts of a cotton mill resolve themselves into those charges which enter into manufacturing cost, selling expenses and general expenses. Others may crop up, but these are the usual groups, aside from the raw material charges, which, in a way, come under the manufacturing costs, as do supplies.

Much ingenuity has been exercised in the form and style of books designed to hold the current records, but perhaps the best method is known as the columnar system. A good exponent of this system is seen in the evolution of a record-book known as the cash-journal. This, as its name implies, is a book taking the place of the old-fashioned cash book and journal, arranged with a sufficient number of distributive columns to fit the needs of the business for which it is designed. The plan is to save time in carrying the monthly totals to the ledger in place of many detail postings. Thus the record of bales, pounds and cost of cotton for the month is carried to the ledger in one writing at the end of each month.

The separation of cotton mill operating accounts into the various groups makes for the more intelligent understanding of what the mill is doing. The purpose of this paper is to present a simple yet useful and practical plan of showing the financial operations at a minimum of time and expense with a maximum of result, a system which shall be sufficiently elastic to expand into the more intricate details of ascertaining the cost of numbered yarn and the different widths and weights of cloth, yet allow the investigator to stop at the total average cost per pound and pound (or yard) price of goods sold.

One of the elements of good management is the keeping down of expenses. Unless the expenditure reduces the cost of manufacture or the general expense cost, managers are chary of allowing any more expense to be charged against the business than is absolutely necessary. There are scores of details which have to be considered in finding cotton mill costs and some mill managers do not prove their manufacturing and other costs and their sales of products with their statement of assets and liabilities until the end of the calendar or fiscal year. It has been claimed that there is no urgent necessity to do this more than once a year; but if this were wholly true one might carry the thought further and say, "If we waited this long why trouble about it at all?" The preparation of trustworthy statements and reports takes considerable time and skill coupled with experience. To get out these statements means that some competent person will have to be engaged several days in each month on such work, which, of course, means additional expense. To obviate this, however, the books and accounts can be laid out in such a systematic manner that after trying-out, and under intelligent supervision the necessary information from the various departments will almost flow into their respective stations.

The purpose of accounts is to furnish financial history which will be immediately available to forecast and make provision for periodical financial needs. By periodical, I mean weekly or monthly. Financial settlements are made by the month when not by the week, or for cash. Naturally then, financial statements should review operations by the month, when not oftener. From this it may be seen that while it would be interesting to go into great detail in making up cost statements and compare periodically the cost and production of each card, frame, or loom, yet it is not always commercially practicable to bring it down to such a fine point. It has been found well to work out these costs on general lines. Thus, determine the number of bales of cotton which have been taken into the mill each day and opened. This record is entered on the consumption report. Then so many bales (or) cuts of cloth come off the looms each day. This is entered with full description on the production report. So much fuel, oil, starch, baling material, repair parts, and other general supplies have been used today. These are all entered on the report

of supplies and repairs. The keeping up with the purchases of supplies and repair parts, together with the issues of such, is a task which, while simple in theory, is difficult in practice, unless there is a regular supply man who has sole charge of them. This record should be kept on large loose leaves arranged in columnar form, suitably headed and designed as a perpetual inventory, showing daily accessions to stock and issues therefrom. Therefore it may be seen that the keeping of a complete record in the office of a cotton mill necessitates a great deal of work with the accompanying expense.

Most accountants agree that it would be well for the management to know each month its exact financial condition as may be disclosed by a statement of assets and liabilities, with the complementary statements of manufacturing cost, general sales (less expense of same), with the gross income account and deductions therefrom. In order to find the costs and values, a systematic account-keeping should be maintained and the reports and statements constructed in the same manner each month.

The average cloth mill spinning its own yarn will find the following chart of accounts to cover its general needs. There may be need of greater detail for some mills, and yet other mills may consider it too comprehensive. Again, others may prefer different captions for the account.

Group A. Inventory Accounts.

1. Raw cotton.
2. Cotton in process.
3. Yarn.
4. Partly finished cloth.
5. Finished cloth.
6. Supplies.
7. Miscellaneous inventories.

Group B. Manufacturing.

I. PRODUCTIVE LABOR.

8. Superintendent.
9. Opening, picking and carding.
10. Spinning, spooling, and warping.
11. Slashing and drawing in.
12. Weaving.
13. Cloth room.
14. Miscellaneous productive labor.

II. GENERAL.

15. Machine shop.
16. Steam plant or power.
17. Yard.
18. Overhead.
19. Machinery repairs.
20. Depreciation.
21. Miscellaneous general labor.

Group C. General Expense or Administrative Accounts

22. Salaries.
23. Office expenses.
24. Interest.
25. Insurance.
26. Taxes.
27. Repair mill buildings.
28. Repair tenant houses.
29. Miscellaneous expenses.

Group D. Selling Expenses.

30. Freight out.
31. Drayage.
32. Commissions and discounts.
33. Samples.
34. Other selling expenses.

Group E. Store Accounts.

35. Store purchases.
36. Store expenses.
37. Store sales.
38. Store accounts receivable.

Group F. Sales Accounts.

39. Cloth sales.
40. Miscellaneous sales.
41. Waste sales.

Group G. Other Income Accounts.

42. Rent receipts tenant houses.
43. Miscellaneous receipts.

As the basis of account keeping lies in altering form without changing values, it will be interesting to review the economic principles contemplated in this list of accounts. For convenience we will adhere to the idea of which the general ledger is the embodiment. That is we will charge to the proper account that which is received by or transferred to it and credit to the proper account that which is taken away or transferred from it.

1. Raw Cotton. To be charged with the inventory at first of period and the cost, freight and drayage, storage and other direct charges of cotton purchased. The loss on hedges is a proper charge also, but where monthly or quarterly statistics are prepared, such charges make violent fluctuations in the pound average as compiled periodically. To so great an extent is this true, especially where the loss is heavy, that it is considered to be the better policy to carry the hedges account until the end of the fiscal year and then transfer it direct to the profit and loss account. The same reasoning would apply if the hedges transactions resulted in a profit.

2. Cotton in Process. To be charged with inventory at first of the period and with the cost of the cotton in process. If it is desired, the distinction can be drawn here very finely and say that cotton in process consists of the cost of cotton plus labor, waste, supply, depreciation, interest upon the investment and other visible charges, if any, up to the spinning. These are the elements that would make up the inventory value of the cotton in process. It is closed out at the end of the period by an inventory prepared similarly to the one at the first of the period.

3. Yarn. To be charged with the inventory of yarn at the first of the period made up at the cost of yarn. This would be based upon the cost of the cotton in process, to which would be added the cost of yarn, arrived at in practically the same manner as the cost of cotton in process. Closed out at end of period like cotton in process.

4. Partly Finished or Unfinished Cloth. Charged with inventory at first and closed out at end of period by inventory at last. The cost of the unfinished cloth would be the same as the cost of the finished cloth, except of course, the cost of finishing. This is cloth room labor, baling, casing, supplies and miscellaneous charges.

5. Finished Cloth. Charged with inventory at first and closed out with inventory at last. Most mills separate their inventory accounts (up to No. 5) into raw material, cotton in process, and unfinished and finished goods. (Waste is considered under sales accounts.) The additional one of yarn is described to show how it should be treated if desired to carry it.

The cost of the finished cloth is arrived at by charging the cost of raw material, plus the waste loss, less the value of the sales of waste, plus (or minus) the difference in the process inventories, plus the manufacturing cost.

The distinction is made here, and it is the viewpoint of this paper, that the manufacturing cost does not include the general expense, or the regular charges against net income such as interest, taxes and the like. It is our purpose to hold manufacturing cost to the twenty-one accounts previously described.

6. Supplies. Charged with the inventory at the first of the period and closed out with the inventory at last. Comparatively few cotton mills keep a complete and proper record of supplies. Doubtless there may be what seems to be good reasons for this, but where the cost runs up to considerable value, it would appear to be good judgment to keep an exact account of the receipt and issue of general supplies and repair parts. The loose leaf or card system is well adapted to a record of this kind. I have seen an excellent example of this as keeping tab on, say, loom parts. The sheet should be ruled appropriately to take care of the date, number, and name or description of the part. After a record keeping system of this kind is installed and begun, it is not as troublesome to maintain as this description might imply.

7. Miscellaneous Inventories. This is to cover any other kind of material or supply thought necessary to separate from those already considered.

In some mills it is found desirable to keep a separate account of cotton purchased from that of raw cotton inventory. In any case it is simply a division of the same material value. Cotton purchased should, of course, be charged with all of the raw material bought and the freight also, unless, as explained above, it is desired to carry these accessory charges on separate accounts. Some mills, whose accounting department is well developed, have adopted the idea of crediting this account with the cotton opened. It is a good plan to reweigh cotton immediately before opening it. This brings out the "wet" loss and is also an effective check. It will be found invaluable in the preparation of the waste statistics. All possible information of this kind is valuable to the management as it may well lead to "tightening up" any looseness, and hence economic saving. The credit of cotton opened to cotton purchased account should be on the basis of the invoice weight and if not the invoice cost, then at least the average cost. The consumption record should carry a column for reweights, as well as for invoice weights. When properly maintained, then, this cotton purchased account becomes a current inventory account for the cotton.

These accounts, with supplies, make up the charges to manufacturing expenditure. The distinction between manufacturing expenditure and manufacturing cost is that the latter is obtained by setting up as a charge the inventory at first of raw cotton, cotton in process and waste, adding to this the cost of the cotton purchased for the period, and to this sum adding the total of the manufacturing expenditure. From this grand total deduct the amount of similar inventories at the last of the period and also deduct the amount of the sales of waste. All of the accounts numbered eight to twenty-one are generally, if not always, covered by the familiar pay roll account. Many mills have an elaborate pay roll arrangement in an auxiliary book and charge the amount on their general ledger under account known as pay roll or operatives account. In large mills where the clerical labor has to be considerably divided, this is a good plan; but if in the distribution of this clerical work, it is left to some record keeper who is not exact in his methods of properly writing up the charges of the various labor accounts, such as opening, picking, carding and the like, it makes it difficult, if possible, to get out reliable statistics on pound costs. Pay roll record should be very carefully kept up. The labor cost is, of course, the big cost to the mill. The mill accounts should blend, one into the other. Thus the raw material cost, increased by waste, then the supply and labor costs, then the general manufacturing and general expense, which with the selling expense constitute the total cost to make the goods and sell them.

The general expense or administrative costs are covered by accounts numbered 22 to 29. These are the usual ones incident to a mill.

The remaining accounts consist of the selling expenses, the store accounts, the sales accounts and other income accounts. They are all so well known as not to need any discussion, except perhaps the waste account.

It may be said that waste being unescapable, there is not much use in attempting to follow it out, but this is only partly true. Perhaps a certain percentage may be established as bagging and tie waste, as flyings from the cards, as motes, sweepings and thread waste, but even if for no other reason than keeping down this percentage, should a continuous scrutiny and periodic examination be made of it. To those mills manufacturing a class of goods where the sizing reduces the net waste in weight, it becomes a matter of interesting inquiry to compare monthly or quarterly reports. For instance, if in a certain period the production of visible waste was 200,481 pounds on a total cotton consumption of 1,951,430 pounds, the percentage would be 10¼ per cent.

Then if the total production of finished goods was ....1,785,750 lbs.
Total visible waste ..... 200,481 lbs.

Total weight gotten out .....1,986,231 lbs.
And the total consumption being .....1,951,430 lbs.

We may see that the net waste has been overcome by ..... 34,801 lbs.

The question then is, what is the total waste? With the knowledge of the weight of the visible waste and the weight of sizing, we may easily establish the total waste. The weight of the sizing material, deducted from the finished goods weight, would furnish a figure from which we could determine the real waste. Such statistics properly prepared gives valuable standards for comparison.

The salient features of this system bring out correctly the following points:

1. The prime cost of cotton, meaning by this, invoice cost, freight and drayage.
2. The increase due to waste. Remember that we do not desire to make waste, we cannot help it.
3. The manufacturing cost.

These three make the total prime and manufacturing cost, including waste.

4. The general cost. This covering all the other costs not previously considered except
5. The selling expenses, which are, in the true sense, a proper deduction from sales.

These five consolidated make the total of all costs, which deducted from the price per pound of cloth sold, etc., enables us to reach at last our final goal, the manufacturing profit per pound of cloth made and (or) sold.

WASTEFUL METHODS IN THE COTTON INDUSTRY.

BY WILLIAM H. HARRISS, TREASURER, SLATER MANUFACTURING COMPANY, PAWTUCKET, R. I.

In this interesting paper Mr. Harriss begins at the plantation and traces the larger sources of waste down to the originator of same. After discussing the wastes caused by planting, ginning, baling, handling, etc., he took up the subject of the actual contents of bales, such as length of staple and percentage of short staple, and said:

This is the subject that has caused us all so much trouble, gray hair, and actual loss of money—the mooted question of what is inside of a bale of cotton. We always find leaf and trash, oftentimes dirt and sand, frequently water, occasionally rocks or stones and on certain stated times a chicken or negro boy. But how about that commodity—staple, for which we paid our money? It is probably not going too far to say that we cotton manufacturers really know less about our raw material than any class of manufacturers in the country. I have always contended that we should give more thought in the future about the contents of a bale, and not spend so much time, as we have in the past, with arguing about the tare of the bags and ties. If it happens that a man ships you a bale of cotton with 30 pounds of tare, when he only has a right to ship 22, then you are arguing over 8 pounds at, say 20 cents, or a total of $1.60. This, of course, is quite an important amount, but it is insignificant if the particular bale under discussion, which is often the case, is stapled to be 1 3/8 inches long, where only a very small percentage is this length, and the balance short and wasty staple. This may mean $5.00 or $10.00 a bale, and should certainly deserve a greater portion of our thought and study. Unquestionably many bales of cotton invoiced and received on the same lot and class vary in intrinsic value from $5.00 to $10.00 a bale.

The present method of stapling cotton by hand is inadequate, and in a way can be compared to the time when the cotton was ginned by hand. Some method must be developed to staple cotton and analyze the percentage of moisture, waste and short staple by machinery, and while nothing definite can be said on this subject here, the writer knows that certain well defined attempts have been made in this direction, sufficient to hold out some slight hope for the final solution of this most important problem.

In the present condition of the trade, when the contents of a bale of cotton must be settled by the variable personal opinion of individuals, it is to be regretted that some national body cannot be organized, with authority to settle disputes, or better still, to pass upon every bale of cotton and stamp its grading and stapling thereon, before it gets into the markets.

Aside from stamping this approval or decision on a given bale of cotton, such a body could be of much service in rendering opinions as to the value of certain efforts that are being made to solve some of the problems that we have before us. One reason why the cotton growing and ginning industry has improved so slowly is that those people who really are attempting to make improvements, and they are many, have no final body before whom they can lay the results of their effort for scientific and just decision.

Very little will be said on the subject of the details of cotton manufacturing. I will point out, however, that we must not expect all the improving to come from the other end, and where we do have damaging conditions in our mills, they should be righted. Unquestionably, picker room machinery has not kept pace with the improvements in other processes of the industry, and much remains to be done in this department. Perhaps you have been impressed with the fact, as I have, that in discussing the subject of the cotton industry from the time the seed goes in the ground until the finished cloth is delivered to the customer, the one paramount consideration is the conservation of the length and strength of the original staple, and while we are asking the farmer and the ginner and the handler to conserve this length, it certainly behooves us to do everything within our power to act accordingly.

Now we come to the subject about which it seems we all like most to talk, and apparently very few have any real knowledge. It has been said in jest that the lawyer's mistakes swing six feet in the air, and the doctor's mistakes are buried six feet in the ground, and I should say that the mill man's mistakes are hidden six feet in the waste bin. If I were asked to pass upon how any mill is being operated, with the privilege of examining only one department before expressing an opinion, I should request to be shown into the waste house. I have always thought that if the average mill did not usually consider putting their waste house in the darkest and most out of the way place around the premises, as is the common practice, it would show a great decrease in its annual loss.

As to the manufacture of this waste from the different departments into salable products, I will say that this is an industry within itself, and for its proper manipulation unquestionably requires more skill and experience than does ordinary cotton manufacture. It is a subject, however, that we are being forced to consider more seriously each year. Certain manufacturers and machine builders are attempting to keep abreast of what is going on, the world over, looking to the day when their by-product, in the present form of waste, will leave their plants in some class of manufactured merchandise, instead of a waste product of raw material.

Since there has been such a shortage of efficient labor in our industry, certain abuses have been allowed to develop that need serious attention. I think it is incumbent upon the managers of plants to decide if they are not more or less responsible for the conditions. We put up to our superintendent the problem of properly running the inside of the mill. He, in turn, passes on to his overseers the question of the proper manning of machinery, and processing, and under the stress of circumstances, brought about by the scarcity of skilled labor, the average overseer is between the upper and nether mill-stones. If he does not get labor, his job is in danger, and if he gets labor and watches them closely, he cannot keep them. The result is there has been a breaking down of the usual discipline that was in force years ago, insofar as little abuses have crept in. The help are allowed more freedom in leaving their machinery before stopping time, and running around their room, with the result, instead of getting a full week's running time of machinery, the percentage is decreased every year. It would seem that a close relation between the managers, superintendents and heads of departments, in solving this problem, would be beneficial to all concerned.

Whether we believe in the much discussed question of efficiency engineering or not, I am satisfied that the manager who takes the position that there is nothing in it for him, will awake to the fact some years in the future that

he was mistaken. Much that has been written on the subject is not pertinent to cotton manufacture, but there is good for all in the general movement, and we should all give attention and pick the good for our individual cases.

SPINNING VALUES OF DIFFERENT GRADES OF COTTON.

BY GEORGE W. NEVILLE, PRESIDENT NEW YORK COTTON EXCHANGE.

There is no single factor connected with the marketing of the cotton crop, with the varied assortment of grades in it, which the merchant has to buy from the farmer, so as to select the even running grades which the spinner requires for his sale of goods, that occasions so much discussion and interferes so greatly with the satisfactory distribution of the cotton crop of the United States by the cotton merchant, as the difference in value of the various grades of cotton above and below Middling.

It is not necessary to state to you the variety and the uncertain proportions in quantity of the grades which the weather conditions of succeeding seasons enable the farmer to produce. One season may be favorable throughout and result in a normal crop with a very small proportion of grades below Middling; the following season may be abnormal in the extreme and the quality produced may be largely of the grades below Middling. The cotton merchant, in order to supply you manufacturers with the quality you need to enable you to produce and sell your manufactured goods, as the demand appears, must face all this uncertainty, and at the same time has to protect himself against price fluctuations on every contract he makes with you, either by purchasing the actual cotton in the South or by purchasing a contract for the future delivery of cotton on some Exchange where such contracts are traded in.

When first organized all the Cotton Exchanges in determining the values of the different grades of cotton for delivery purposes, used the so-called "Commercial Differences" *i. e.*, the differences in price which the various grades above and below Middling were actually fetching in the markets daily; the prices being determined in fact by the offers and acceptances of merchants. The New York Cotton Exchange was the first to discover the possibilities of manipulation involved in this system and the consequent harm to merchants. It found that the entire contract market was being continually manipulated month by month, and that merchants who had purchased large lines of cotton in the South, of assorted grades, were finding their sales of contracts as hedges against their purchases, affected injuriously to them by the manipulation of these so-called "Commercial Differences," and the price of contracts thereby. After a heated discussion culminating in 1897, this system of differences was changed by the New York Cotton Exchange to the two revisions of these differences each cotton season, one in September and the other in November. The New York Cotton Exchange found this method answered all purposes admirably until the low grade crop of 1906-07, which proved to be the lowest grade crop ever produced in this country. Much disturbance necessarily followed in all contract markets and great dissatisfaction was expressed by the cotton merchants and spinners of the country, their criticism being directed particularly against the New York Cotton Exchange in spite of the theory and experience that the difference between the basis Middling contract price and the price of Middling even running will not invariably rule at a uniform amount, and in the nature of the business cannot do so, even with the most drastic daily revisions of the grade differences. The reason for this is that the Basis Middling contract price represents constant trading in the range of grades deliverable, with which all who use the facilities of the Exchanges are familiar, and the wide disparity between the Basis Middling price and the even running Middling price is caused by the scarcity of that particular grade or higher grades, due to a low grade production by the farmers. The Liverpool market is the greatest of those having daily revisions. The difference between even running Middling on the spot and the price of their Basis Middling contract on the 15th inst. was 26 Liverpool points or 52 points our currency, and the difference in New York on the same date was 50 points.

At the request of your organization and of The American Cotton Manufacturers' Association, committees from your spinning organizations met committees from the New Orleans and New York Cotton Exchanges to consider certain complaints and recommendations which your joint committee presented. After a prolonged discussion, the following was agreed on by all parties to the conference:

1st. The New York Cotton Exchange should have another revision in February of each year, making three each season.

2nd. The adoption of the Government standards when made of Upland cotton.

3d. The New York Cotton Exchange to issue certificates of classification for single bale certificates, if it could be done without too much expense.

The first has been complied with and was effective last February.

The second could not be done owing to conditions the New York Cotton Exchange could not control, although the resolution was presented to the proper parties, as passed by the conference above referred to.

The third has not been done as warehouse labor cost was found to be prohibitive, but the method of issuing the grade certificates has been changed from that ruling before the conference, which all agree was for the better.

The management of the New York Cotton Exchange still believes its system of adjusting differences is fairer to the cotton trade, and is sustained in this belief because the Bremen Cotton Exchange, after a study of the by-laws and rules of all cotton exchanges, has adopted the three revisions each season, *viz.*, September, December and March. They begin trading in contracts for the future delivery of cotton September 1st next. While this method is better, in our opinion, than the so-called "Commercial Difference system," still the fact remains that whatever may be the action of the committee of the Exchange having to do with the changing of the differences in September, November and February, that action is always open to criticism on the part of some one, whether justly or not; and those merchants or spinners having contracts open are liable to find that the values of these contracts are substantially changed, either favorably to one, or adversely to another. Hence it is our opinion that a method should, if possible, be inaugurated, that will not work hardship or a profit on anyone having contracts open on the cotton exchanges.

With this end in view, the New York Cotton Exchange caused spinning tests to be made to determine the waste and other losses involved in the manufacture of the different

grades of cotton. The tests were made by the Clemson Textile School, of South Carolina, and the Lowell Textile School of Massachusetts, and the results obtained in these tests as regards the relative manufacturing values of the grades of Good Middling, Middling, Low Middling, and Good Ordinary cotton, are convincing that a system of differences on each grade of cotton may not be exact, yet the variations are so small that the benefits to the cotton trade would more than offset them.

The principal cause of any difference in the value of all grades as compared to Middling, is the foreign substance thrown out of the cotton in passing through the different manufacturing processes. This loss should be determined through ample tests by textile schools in the various Southern states and New England, or by the Agricultural Department in Washington as an arbiter. The treatment should, of course, be conducted on uniform lines in each test, and an average of all tests made to arrive at the commercially approximate percentage of loss of each grade in manufacture. The cost of labor in the manufacture of each grade could also be worked out, and applied to each percentage of loss of each grade.

The yarns made from each grade could be valued and the percentage difference in value applied to each grade of cotton. This would determine approximately the grade difference on a percentage basis. If the Basis Middling contract were selling at 10 cents per pound and Low Middling shows a loss in excess of Middling of 6 per cent., Low Middling would be deliverable at 60 points off Middling, or 9.40, and the other grades in like proportion, and so on, as the market advanced or declined.

In connection with the preliminary tests mentioned above, the value of the lower grades was further clearly established by ascertaining the breaking strength of the yarns made from each of the four grades. It may interest you to be given the details of these tests, which were made on a Goodbrand and Holland power tester, using a skein of sixty yards. One test was made from each of twenty-five bobbins. All the tests were made by one man who wound the yarn under uniform tension and carefully transferred the skein from the reel to the tester.

	Good Middling	Middling	Low Middling	Good Ordinary
Average Breaking Strength	68.4 lbs.	71.81 lbs.	65.4 lbs.	63.1 lbs.
Average Weight 60 Yards	36.03 grs.	38.2 grs.	36.9 grs.	36.0 grs.
Average number	13.88	13.08	13.55	13.89
Strength per grain	1.89	1.88	1.77	1.75

The meager tests made by the New York Cotton Exchange to demonstrate the practicability of applying this method of differences for determining the prices at which grades above and below Middling should be delivered on contract of sale of a Basis Middling contract for the future delivery of cotton, also clearly demonstrated the spinning value of Good Ordinary, the lowest grade deliverable on a contract of sale for the future delivery of cotton, and many manufacturers to whom these yarns and results have been shown here expressed their surprise and stated they have since been using these low grades and the results are very satisfactory.

In this connection, it seems to a large number of the cotton merchants that cotton manufacturers could cheapen the cost of their raw material greatly, by purchasing the lower grades at the discounts prevailing, even when the average grade of the crop is normal; and when the grade of the crop happens to be abnormally low, these lower grades could be economically bought and used to great advantage; particularly is this the case when the yarns are dyed or the cloths printed.

National Association of Hosiery and Underwear Manufacturers.

As we go to press the ninth annual convention and exhibition of the National Association of Hosiery and Underwear Manufacturers is opening at Philadelphia. It is expected to exceed all previous events in size, scope and importance. The exhibition features show a marked improvement, all the space available being reserved. Elaborate arrangements have been made for the convention and exhibition, both in a businss way and socially. No expense has been spared to make this annual reunion one long to be remembered. We present herewith the program and some of its principal features.

PROGRAM.

MORNING SESSION, TUESDAY, MAY 6, 1913.

Open to the hosiery, underwear and fancy knit goods manufacturers, members and non-members; also all associate members.

Meeting called to order at 10 a. m., in the Veteran Corps room of the First Regiment Armory, Broad and Callowhill streets.

Opening remarks, Charles E. Leippe, president.

Invocation.

Welcome Address—Hon. Rudolph Blankenburg, mayor of Philadelphia.

Reading of Minutes of 1912 convention.

Annual report of the president.

Annual report of the secretary.

Report of the treasurer.

Reports of standing and special committees.

Reports of sub-associations.

Report of board of directors.

Address, "The Quid Pro Quo of the Hosiery Industry," by Charles Vezin, of Hinchman Vezin Co., New York.

Impromptu discussion.

Address, "Arbitration," by Fred W. Simons, of Simons & Struve Hosiery Company, Philadelphia.

Address, "Good Business Practices from an Attorney's Standpoint," by Morris Wolf, of Stern & Wolf, Philadelphia.

Communications.

Miscellaneous business.

Appointment of nominating committee.

Adjourn.

AFTERNOON SESSION, TUESDAY, MAY 6.

2:30 p. m.—Meeting of the various hosiery sub-associations, as arranged and announced at previous session. See bulletin board at entrance to armory.

2:30 p. m.—Convention hall. Special meeting of the underwear members.

MORNING SESSION, WEDNESDAY, MAY 7.

Meeting called to order at 10 a. m. in the convention hall of the First Regiment Armory.

Address by Hon. J. Hampton Moore, congressman from Third district, Pennsylvania.

Reports from special committees.

Miscellaneous business.

Address on "Advertising," by Frank Finney, of Street & Finney, New York City.

Open discussion.

Address by J. H. Schofield, of Sullivan & Co., Philadelphia, representing the Jobbers' Association of Knit Goods Buyers.

Response by P. C. Withers, Illinois Knitting Co.

Report of Cost Committee, by Mr. Robert C. Blood, of John Blood & Co.

Open discussion.

New business.

Resolutions.

Question box.

PRESIDENT CHARLES E. LEIPPE.

Discussions on questions presented.

Election of officers.

Appointment of committees.

Selection for dates of next meeting.

Adjourn.

AFTERNOON SESSION, WEDNESDAY, MAY 7.

2:30 p. m.—Meeting of the various hosiery sub-associations, as arranged and announced at previous sessions. See bulletin board at entrance to armory.

2:30 p. m.—Convention hall, First Regiment Armory. Special meeting of the Underwear members.

Manufacturers of woolen hosiery, gloves, mittens, sweaters and fancy knit goods will at 2:30 p. m. be provided with rooms, in which they may meet to discuss questions directly affecting their interests. See bulletin board at entrance to armory.

WEDNESDAY EVENING, MAY 7.

Elaborate arrangements have been perfected for a banquet and vaudeville smoker, which will be given at the Scottish Rite building, southwest corner of Broad and Race streets, beginning promptly at 8:30 o'clock. No expense will be spared in making this event one of special prominence in keeping with the association's standing and achievements. This entertainment, including refreshments—liquid and otherwise—is tendered complimentary to the Knitting Manufacturers, Knit Goods Buyers, Exhibitors and Advertisers in The Knit Goods Bulletin and Official Program and their Representatives.

MORNING SESSION, THURSDAY, MAY 8.

Admittance to hall strictly confined to those holding registration cards.

Meeting will be called to order at 10 a. m.

Address, "Practical Methods for the Manufacture of Silk Knitted Goods."

Address, "Scientific Management," by Frederick W. Taylor, Philadelphia.

Address, "Conditioning and the Accurate Testing of Yarns and Fabrics," by D. E. Douty, manager United States Conditioning & Testing Co., New York City.

Open discussion on topics mentioned. (Discussion on each subject formally opened by a member). Net Weight Yarns. Credit Bureau Department. Collection Department. Cancellations—How Best Corrected. Question Box. Impromptu Discussion on the Various Questions Asked.

ARBITRATION.

AN ADDRESS DELIVERED BEFORE THE NATIONAL ASSOCIATION OF HOSIERY AND UNDERWEAR MANUFACTURERS IN CONVENTION AT PHILADELPHIA.

BY FRED W. SIMONS.

When our worthy president assigned me to the task of addressing you upon the subject of arbitration, I felt that the topic afforded me no opportunity whatever to construct an interesting essay; not that the subject lacks either interest or importance, but because it has always seemed to me that there is only one side to the question, and that the natural, logical way for civilized, sensible, honest people—individuals or nations—to settle disputes, is by arbitration.

I am glad, however, that I did not insist upon being permitted to select my own subject, because aside from the fact that I feel that any man who endeavors to promote the cause of arbitration honors himself, I found that my efforts to concentrate my mind upon the subject revealed to me more clearly than ever before the fact that all moral questions are inseparably allied.

There is no question involving right and wrong that is not vitally connected with every other question involving right and wrong, and I am convinced that if a man had sufficient mental and moral capacity he might commence to discuss arbitration and proceed, step by step, to analyze every other question involving moral principles without ever once jumping the tracks or failing to pass logically from one subject to another.

It may not have occurred to you, gentlemen, but this question of arbitration is not a voluntary one; it is not a question of whether we shall or shall not arbitrate; we do arbitrate and are compelled to arbitrate all disputes. The only question is as to what sort of a tribunal we shall appeal, and whether it is or is not worth while to make provision while amicable relations exist for the best possible adjudication of disputes when they arise.

One of the first essentials of civilized government is to

make provision for arbitration—trial by jury—which as you know is incorporated in the constitution of the United States, and which for five centuries before the creation of that instrument had been regarded as one of the greatest safeguards to human liberty. It is so regarded today, and will probably continue to be so regarded as long as human government exists.

Therefore, I say we have no choice as to whether we shall arbitrate or not. Unfortunately, when it comes to international disputes, we have no magna charter or constitution or international authority to prescribe the character of the tribunal of arbitration, so we resort to the "arbitrament of the sword," and accept the verdict, that the litigant who is most proficient in the diabolical arts of wholesale murder and destruction is in the right.

And yet we have seen men of great intelligence; men whom the nation has delighted to honor, defeat the ratification of arbitration treaties negotiated by our own government, on the plea that "you can't arbitrate a question of honor."

Gentlemen, it is no use mincing words about this thing; some kinds of honor stink, and we never learn what real honor is until we have gotten rid of the stinking kind. We put our conceit and our vanity and our selfishness on a pedestal and call it honor; and of course you can't arbitrate that; the only thing that you can do with it is to rip it up by the roots and let it die.

Nothing in the whole field of moral philosophy is more obvious than that human slavery is incompatible with human freedom, yet we murdered a million men because that simple fact was obscured by a false conception of honor. Honor in the true sense is always within our own keeping and dishonor of our own inflicting. No court of arbitration could inflict dishonor upon this country, nor upon any other country. It might inflict injustice and thus dishonor itself, but the nation upon which the injustice was inflicted could not be dishonored thereby.

The progress of modern civilization has synchronized as it were with the progress made in arbitration. The most civilized nations are the most law abiding nations and they have all abolished dueling. The "code of honor" is simply a laughing stock, and the idea that men can vindicate their honor by standing up and shooting at each other has become ludicrous. If any try it we regard them as degenerates and send them to jail, or as lunatics and put them in asylums.

Mr. Roosevelt says "you can't arbitrate a question of honor; you can't arbitrate the Monroe doctrine, for instance." It would be interesting to know what kind of honor Mr. Roosevelt has in mind. Does he mean that kind of honor which consists of the homage the world pays to the great and powerful, or does he mean the honor that belongs to every honest man? If he means the latter, he is correct, because it can't be made the subject of arbitration; it is a part of the man himself; it is his integrity of character and purpose, and no earthly tribunal has or can have jurisdiction over that. But if he means the former, I would like to ask Mr. Roosevelt why you cannot arbitrate that?

Even supposing—and it is a ridiculous supposition—that the most enlightened nations in the world cannot produce an international tribunal beyond any reasonable suspicion, what loss of ducats or of dignity would outweigh the real and lasting honor that will accrue to the nations who first demonstrate the sincerity of their belief in the reality of human progress by pledging alike their dollars, their dignity and their sacred honor as hostages; each for the honor and integrity of the other? Can't arbitrate a question of honor? Certainly not, so long as we entertain the delusion that all the honor there is is bottled up in our own carcass.

Of course we have to make allowances for Mr. Roosevelt in connection with this subject, because he is a fighting man by nature, a warrior born who thrives on conflict. I think that must be the reason why he married the square deal to the big stick, and it's about the worst misalliance that ever happened; they are absolutely incompatible and must ultimately be divorced.

Of course, we must have laws, and we must enforce them for the protection of society; but it's a mighty poor grade of square deal that you can secure only by using the big stick. You can't club men into loving each other; you can't beat into men the qualities of heart and mind which

FRED W. SIMONS.

are the birthplace and cradle of the square deal.

The big stick and the battleship alike are instruments and emblems of savagery and barbarism. They never did and never can decide a question of equity or of honor. It may not be practicable, in fact it is clearly impracticable for the great nations of the earth to entirely abandon their armaments at this time. Aggressive brute force can only be met by brute force. But just to the extent that the world is progressing in real civilization it recognizes the true character of man and places righteousness and truth and intelligence above selfishness and cunning and brute force; and if the great nations of the world are not yet ready for arbitration without a string to it, it is because they are not yet sufficiently civilized. We speak of civilized warfare, but the term is a misnomer. There is no such thing and can't possibly be any such thing; warfare is wholely and essentially barbaric.

I am, however, convinced that an overwhelming majority of the people of the United States, Great Britain, Germany and France, would rejoice in a compact that would banish forever the possibility of war between any of them, even if that compact called for the arbitration of questions involving national honor.

How a question of honor, which is essentially a question of right and wrong, can be decided by compelling a few thousand or a few hundred thousand men to kill each other, neither Mr. Roosevelt nor anyone else can explain, and his attitude upon this question is an attitude of opposition to human progress and is directly in conflict with divine precept.

Neither war nor arbitration is necessary except when diplomacy fails, the question therefore narrows itself down to a choice between them; they are instruments of last resort, and I submit that arbitration is so clearly the better instrument that those who hesitate to select it are reactionaries and not progressives.

We are told that history repeats itself; that human nature is human nature, and that it don't change essentially. I don't believe it. The progress made during the last century or two has no counterpart in history, and the development of the arts and sciences has back of it an intellectual development without compare in history: and I am going to believe that intellectual development has been accompanied by a corresponding moral development. If that is true there should be, and there is, an increasing disposition to select moral weapons to fight with—if fight we must.

Passing from international disputes to disputes between business men, we may still find immense possibilities for usefulness in the practice of voluntary arbitration, and if I am any judge, nothing would operate more powerfully to promote international arbitration than a practical demonstration of its usefulness and efficiency on a large scale in the business world.

The present time is particularly opportune for such a demonstration. The great progress made during recent years in trade organization opens up the field in a way that it has not been open before; business men are organizing, keeping in touch with each other, and meeting together, for the sake of any benefits which may accrue from mutual counsel and cooperation; and as a result cooperation along any particular line is rendered much easier and more practicable than formerly.

I am of opinion, therefore, that if the advantages of arbitration were brought clearly and forcibly to the attention of the membership of the various business associations, the great majority of such membership might be relied upon to cordially endorse and support any well conceived plan to put the principle to practical use.

Business men as a rule don't like to become involved in law suits; many submit to a measure of injustice or financial loss rather than appeal to the courts. They feel that legal proceedings are apt to involve unreasonable expense, inconvenience and delay, and that it is by no means certain that justice will be the outcome, anyway. *And they feel that way because it is that way.* These facts indicate that in our methods of administering justice we have not kept pace with the progress made in other directions. Perhaps if we knew the reasons for this state of affairs the remedy would suggest itself.

I am not posing as an authority, but I give you my opinion as a layman for what it is worth. It seems to me that we have been pursuing a wrong ideal; that in our efforts to secure equal rights for all men we have relied too much upon our ability to secure those rights by the enactment of law. We have tried to construct automatic machinery to dispense justice. It can't be done. We can build a machine that will talk, but we can't build a machine that will think; least of all can we build a machine with a conscience.

It seems to me that if we are to make real progress in the administration of justice we must reverse this tendency and rely more upon the integrity of our courts backed up by and held responsible to an enlightened public opinion, and to that quickened public conscience of which we hear so much.

"To the making of laws there is no end," and it would seem to be time to pause and ask ourselves in all seriousness whether we are not defeating the ends of justice by the enactment of law. Have we not by the multiplicity of our laws and by the practice of giving to precedent the force of law, robbed our courts in a large measure of the judicial discretion necessary in many cases if justice is to prevail? I don't see how it is possible to escape that conclusion.

This tendency to restrict judicial discretion and rely entirely upon the letter of the law, seems to be the survival beyond the period of its usefulness, of a policy once very necessary to the attainment of equal rights. One can readily see how valuable and necessary such a policy was centuries ago when the people had no voice either in the making of law or in the creation of the courts; when all authority and influence was vested in an aristocracy, and when the people were struggling for political emancipation and for equality before the law.

But these conditions no longer obtain and the policy has ceased to serve any useful political end; the question is, has it not become an obstruction in the pathway of justice? I quote from the article on "equity" in the Encyclopædia Brittanica:

"Chief Justice Vaughan (Reign of Charles II, 17th century) said: 'I wonder to hear citing of precedents in matters of equity, for if there be equity in a case, that equity is an universal truth, and there can be no precedent in it; sothat in any precedent that can be produced, if it be the same with this case, the reason and equity is the same in itself; and if the precedent be not the same with this case, then it is not to be cited.'"

Now, I submit, gentlemen, that that is sound logic, based upon a clear perception of the nature of equity and justice itself. It ought to prevail today; it sounds as though it belongs to 20th century civilization.

The article continues:

"But Lord Keeper Bridgeman answered: 'Certainly, precedents are very necessary and useful to us, for in them we may find the reasons of the equity to guide us, and besides the authority of those who made them is much to be regarded. We shall suppose they did it upon much consideration and weighing of the matter, and it would be very strange and very ill if we should disturb and set aside what has been the course for a long series of times and ages.'"

That seems to me to ring true of the 17th century. The unfortunate thing is that it is the basis of 20th century methods. Chief Justice Vaughan appears to have been about five centuries ahead of his time.

You may prohibit and penalize the more flagrant forms of wrong doing, and should do so; but you cannot specifically prohibit all possible forms of evil. Human nature is too complex and human activities too infinite in their variety to permit of it. Moreover, the intentions and purposes of men always qualify the moral status of their actions, rendering the administration of exact justice exceedingly difficult and sometimes altogether impossible.

Law contemplates justice, and according to the highest code of which we can conceive must be construed accordingly; if the letter of the law will not admit of such con-

struction in any particular case, then the law in its application to that case should be null and void by that very fact. Of course, I don't expect any eminent jurists to endorse this view, but to argue to the contrary is to argue the right of the state to commit acts of injustice—and there can be no right to do wrong. Justice is at once the end for which the law exists and the source of its true validity. For these reasons you cannot mould exact justice into the rigid form of law; how foolish, then, is it to think that we can eliminate the human factor in the administration of justice.

We shall, of course, never be able to dispense with the rigid enforcement of the law until we render willing obedience to the law. But this fact only emphasizes the importance of keeping ever before us the end for which law exists, and if we can accomplish that end without appeal to the law, then the law is not destroyed, but fulfilled. Hence the great possibilities for usefulness open to voluntary arbitration.

What can business men with their organizations do about it? Well, they can do a great deal. They can show the way. They can set up tribunals of their own, which for the disposition of certain cases will be more efficient than the courts, because they will be composed of men having technical and practical knowledge relating to such matters as they may be called upon to adjudicate; and because they may dispose of them solely upon their merit, being unrestricted by precedents or by any conflict between law and justice, and it is justice, not law, we all want—is it not?

The rule is that if you have a remedy at law you have no case in equity, and it may be a wise rule, but thousands of cases go to juries that never ought to go to them because the average drawn jury is not competent to properly decide them, and they should either be decided by the bench or referred to competent arbitrators.

We all know how annoying law suits are, and how frequently justice miscarries; it's a common saying amongst lawyers that "you never can tell what a jury will do," and in trade disputes they so frequently do the wrong thing that it would be superfluous for me to cite instances. This is no reflection upon the integrity of the courts, nor upon the intelligence of juries; it is simply because they are frequently called upon to decide questions which, by reason of their lack of technical or special knowledge, they are not competent to decide.

To illustrate by a figure we can all understand; how are twelve men who know nothing of yarns or spinning or knitting going to properly adjudicate a dispute between a knitter and a spinner as to the quality of yarn delivered; especially after they have had it all explained to them by two lawyers who don't know anything about it? They can't do it, and if they do render a just verdict they arrive at it by chance or by intuition.

On the other hand, suppose that such a dispute is referred for settlement to a court composed of two members of the arbitration board of the Knitters' Association, two members of the arbitration board of the Spinners' Association, and one member from the arbitration board of some allied trade—I submit that you have a competent court.

Of course, everything depends upon your arbitrators being honest men, but you have to take that chance anyway. You can't reasonably expect that a common jury will be of more than average honesty, but you can reasonably expect that a trade association will select for its permanent arbitration board men of standing and character; and I, for one, would be quite willing to submit to the decision of such a court, believing as I do that our successful business men are not only of exceptional ability, but also of exceptional integrity—all reformers and big stick wielders to the contrary notwithstanding.

It may be objected that business men have frequently tried arbitration in the past and not always with satisfactory results. This is true, but such failures may generally be explained on the ground that such cases have not been tried by competent, unbiased arbitrators, the parties at interest having themselves appointed a majority of the tribunal; each litigant selecting one arbitrator and the two so selected a third. In substance, this practice amounts to each litigant selecting an advocate and the two advocates selecting a judge; and the result depends largely upon which litigant has selected the ablest advocate, just as the result of law suits frequently depend upon which side has selected the ablest lawyer.

The litigants should have no voice in the selection of the arbitrators. What we need to settle disputes between business men is an unbiased tribunal composed of business men of high standing, competent by their own knowledge and experience to pass upon such cases as may be brought before them, and I believe that if such a tribunal were available nine business men out of every ten would prefer to appeal to it rather than to the courts.

The question is, can this thing be accomplished? I think it can, and it seems to me that the task of doing it falls legitimately and naturally upon the shoulders of the trade organizations.

THE QUID PRO QUO OF THE HOSIERY INDUSTRY.

EXTRACTS FROM AN ADDRESS DELIVERED BEFORE THE NATIONAL ASSOCIATION OF HOSIERY AND UNDERWEAR MANUFACTURERS AT PHILADELPHIA.

BY CHARLES VEZIN, OF HINCHMAN, VEZIN AND COMPANY, NEW YORK.

I should have called my address, "The Quid Pro Quo of the Hosiery Industry and Other Matters." I will take up the other matters first.

I would like to reply as briefly as possible to some of the criticisms of the address I made here last year. Henry Clews, in his annual review, tries to refute the arguments I put forth on the relation of rising prices to the gold supply, and says that the increased gold supply is trivial compared with the increase in the amount of credit, etc. To quote his words: "Infinitely more credit is based on salable property than upon gold." One of my business friends sent me Mr. Clews' article with the remark: "I see that Mr. Clews does not agree with you as to the relative effect of gold and credit on prices." I wrote this friend as follows:

"Some of the things which Mr. Clews says are very true, but I differ with him in toto as to what he says about the increased gold supply being an insignificant factor as compared with the very much greater extension of credit, which credit is based on other property besides gold. He forgets that wherever credit is based on other property besides gold, all such property is measured in terms of gold, and that therefore gold is the ultimate standard and it is the debase-

ment of the standard which is the great factor in the advance in prices.

"You say that I contend that gold is the basis of credit. I do not contend this. I contend that it is the *measure* of all values, including the measure of credit. It is this distinction of the "basis" and the "measure" which leads to so much confusion. Thus: You may have a building worth a million dollars as the basis of your credit, but this million dollars is *measured* by gold; that is, your building is considered worth the equivalent of so many ounces of gold. Now if at once the world's supply of gold should be doubled, the basis of your credit in *purchasing power* would remain the same, but the measure of value, that is gold, would drop tremendously, and if the purchasing power of gold were cut in half the *measure* of your credit would double in gold. In other words, the *basis* of your credit would remain the same, but the statement of the *amount* of your credit would be doubled and the *standard* by which your credit was measured would be cut in half. That is, to make a statement of the same degree of credit which you enjoy, the sum would be doubled when measured by that debased standard."

On the other hand, Prof. Irving Fisher, of Yale University, author of "An Unshrinkable Dollar," writes me:

"I have only just found time to read carefully your article on 'The Relation of the Increased Cost of Living to the Knit Good Industry.' I have enjoyed reading it and disagree with you only at one point, *i.e.*, as to credit in relation to prices. My reason for this difference in opinion you will find in my book, 'The Purchasing Power of Money.' I should be pleased to hear from you further."

Before having a chance to read Prof. Fischer's book I wrote him that I presumed he would show that increased credit stimulated buying, and that this demand for commodities was apt to be greater than it would be if all business were on a cash basis, but that this was entirely different from a like increase in the supply of gold and of vastly less influence.

His reply contained the following words: "You will find the question raised treated in my book, as you have already supposed that you would."

There is one point in my last year's address that I would like to modify. I mentioned the drift of population from the farm to the city and a consequent relative decrease in the supply of foodstuffs as one of the important factors in the rise of prices, but I did not give this factor sufficient weight. I find that during a period in which population increased 25 per cent the production of the farm products increased but 3 per cent.

The producers of wealth are the manufacturer, the farmer, the cattle raiser and miner. The consumers are the professional classes, the middle-men, insurance agents, brokers, teachers, officials, etc. The producers of wealth, of course, include those who *direct* the producers of wealth.

We cannot all of us become brokers, doctors, lawyers, artists, clerks, conductors, etc., etc., without lessening the relative supply of the necessaries of life. More and more of us go into these vocations because we can make more money than by remaining on the farm, or because we think we can, or because we prefer town life. This applies even more to the wage-earner. And so we multiply the manufacturer, merchant, doctor, lawyer, etc., etc., but relatively, at least, cut down the producer in the fields. What good will it do the world to have a great supply of clothes, legal and medical advice, transportation, cars, etc., with not enough food to go around? Naturally, food goes up and up.

If we all went to the city, the world over, we would starve to death on a million a year. The difference between that and what is happening is only one of degree.

I think it was Mr. Dooley's advice to clergymen that "Whiniver ye have nothen ilse to do, knock the wimen." I believe the women are largely responsible for the increased cost of living. They are, in more senses than one, a great factor in the increased cost of living. It is an old subject to refer to their increased extravagance in dress, wastefulness in the household, etc. But there is another very positive factor: Women are no longer content to live on the farm. They seek the "wider life"—the wider life of the city flat—the moving picture show, forsooth! So they make the farmer and the farm hand throw up their jobs and move to town, and there is that much less of milk, and eggs, and poultry, etc. I, personally, know of several cases like that, and I know of other cases where men long for the farm—but, "My wife won't let me."

There is another matter I wish to speak of before coming to the subject of my address. The matter has bearing on what is to follow, for the question of female help is an important one in our industry.

My sympathy has always been with the working classes, and especially with the working girl, but of all the hysterical legislation contemplated there is nothing so futile or pernicious as a minimum wage law for women to "keep them from going wrong."

How about the boys? Most office boys of sixteen start in at about $4.00 per week, and work up slowly. Why not give them a minimum wage so that they shall not steal? Why not give every married man a minimum wage and raise the minimum with every child, so that he may not commit some crime?

No girl of sixteen shall earn less than $9.00 per week—($1.50 per day)—a man's wages? That means that no girl shall be employed at all, unless she be unusually valuable.

Is a girl to be deprived of the liberty to work for $8.00 per week if she would rather have that than nothing? And how about the New York girl? Will $9.00 go as far there in keeping her from sin as it will in a country town where board costs half as much? Should she not have a minimum wage of $15.00 to be placed even with the girl in a country town?

Why, all at once, should we assume that a child of sixteen, male or female, should be self-supporting?

A minimum wage is like saying to a party of ten, on a boat, with ten pieces of bread: "No one shall have less than two pieces."

How about learners that cost the manufacturer hundreds of dollars more than he pays them?

The greatest danger of the degradation of woman today is not hunger! It is, not only the desire for display and dress, and the effort to be a "real lady," but the "Turkey Trot" and similar dances, all of which are nothing short of wireless adultery.

The question is: Can poverty be eliminated by legislation? Can the price of labor be fixed by law any more than the price of land, or of beef?

You cannot regulate the price of labor, except by doing someone else an injustice. Skilled labor is controlling its price by depriving others of the right to become carpenters, plumbers, masons, etc.

It is easy to create a demand for a thing if you want to rob Peter to pay Paul. You can create a demand for labor

if you do not have to count the cost. The cow that caused the Chicago fire by upsetting a lighted lantern created a tremendous demand for labor. But these things always bring their reckoning. Not only were the owners of the houses and the ruined insurance companies the losers, but even the carpenters, masons, painters, etc., were, in the end, made to feel that so much *wealth* had been destroyed.

And who is going to pay for this increase of minimum wage? Do you think it will come out of the pockets of the merchant or of the manufacturer? No! The consumer will pay for it. In short, another increase in the cost of living, sharper than anything we have had. And all this bears heaviest on that class which has always been called the backbone of civilization—the middle class, the salaried man, the bookkeeper, the teacher. It is these people who will be taxed to pay for a minimum wage, and also the beneficiary of the minimum wage will be taxed. It is robbing Peter to pay Pauline—but it is also robbing Pauline and her relatives to pay Pauline.

I protest against a minimum wage law because I believe it will hurt those for whose benefit it is intended. Where some will get more pay, many will get none. When the poet wrote: "The devil finds some mischief still for idle hands to do," did he refer to mill hands?

The hosiery "interests" are not synonymous with those who are interested in hosiery, for—who is not? "Lives there a man with soul so dead, who never—" has been stirred by the glimpse of two inches of hose? My earliest boyhood recollections go back to the time when all stockings were white and all shoes black. Then there came a time when every girl wore stripes, whether she was a criminal or not; and then a period when every woman was a black-leg; and every man belonged to the Black Foot tribe of Indians. There was no "fast" black.

In the hosiery business, although it is an honest business, black is not black and white not white. Black ladies' hose, for which you have all received orders by mail, are not black. Black ladies' hose are usually every color of the rainbow. White ladies' hose are usually black or tan.

Every step a man or woman takes in life is accompanied by your product. No man can attempt to fill another's shoes but he must first fill some of the product of your mills.

What is needed more than any other brand is fool-proof hosiery.

In his speech at Staunton, Woodrow Wilson said: "In future no man will be permitted to get rich without giving a *quid pro quo*." In other words, he must render service in return for what he gets.

The hosiery manufacturer is no less selfish, no more altruistic, than anybody else. I am simply going to state facts. These facts should prove that the tariff legislation now threatening our industry is unjust, undeserved.

One of the largest clothing stores on Broadway—one of the biggest advertisers in New York—retails at 50 cents a pair boys' stockings which we sell at $1.75 per dozen to a jobber. He pays the jobber $2.10.

I went into a furnishing goods store to buy some collars and the clerk called my attention to their special bargain sale of socks at three pairs for a dollar. It was a 220-needle lisle sock, which any of you gentlemen would be delighted on which to run your whole mill and never make anything else, at $1.50 per dozen. You have been unjustly accused of many sins.

The Tariff Chamber of Horrors, during the last political campaign, had in its window stockings figured out to cost 9 3-4 cents per pair to make, retailing at 25 cents per pair. But why blame the *manufacturer* for that any more than to blame him in the above mentioned two instances? Does anyone blame the farmer who gets 3½ cents per quart for milk because the consumer has to pay 9 cents?

It is safe to say that the average profit to the manufacturer of domestic hosiery is considerably less than 1 cent per pair. I believe it is not over half a cent per pair.

What is the *quid* that the hosiery manufacturers have given for the *quo*, and what is the *quo* they have received? The *quo* is, that few of you have grown even moderately wealthy, and there are amongst you no swollen fortunes, as in other industries. As to the *quid*, you have given more than any other industry that I know of. Most other commodities have advanced in price during my time, some of them have trebled, at the same time depreciating in durability. I have some old carpets in my family made thirty years ago that show no sign of wear. I also have some of recent manufacture that have been down but two or three years that look shabby. Wall papers fade out in a few weeks, or turn into mud. We all know how sleeve and coat linings go to pieces in a few months; that a satin-lined overcoat is a short-lived snare; that neckwear and umbrellas and dresses, are made of loaded silk that breaks like so much spun glass. I could go on enumerating for a long time. I will not go back to ancient history unless you call *me* ancient. I will only go back to my earlier business experience with domestic hosiery some twenty years ago. At that time most domestic hosiery had big seams, had no durability, and fast dyeing was unheard-of. When the first seamless goods appeared they were coarse gauge, stiff, harsh, and fast color was still unknown. The first trip I made with domestic hosiery, I showed a woman's 120-needle hose at $1.75, with a black that left the skin of like hue. It was snapped up by every buyer who saw it. Much better and finer goods, elastic and fast black are sold today at less than half that price.

About the same time I showed a 160-needle half-hose at $1.50 with the same fugitive dye, an article not as good as you can buy today for 70c. I could give many other items of this nature.

So we have progressed, until today we furnish mercerized lisle 240 needle, fast black, double sole, high spliced heel, double welt, as cheap as was the coarse article of twenty years ago.

Statistics show a slightly higher average price for domestic hosiery since the passage of the Payne-Aldrich bill. This does not mean that the domestic manufacturer has advanced his prices. On the contrary, taking the same values, prices are lower. The increased average price is due to the fact that under the beneficent effect of adequate protection the domestic manufacturer has been able to make more of the 25 cent and 50 cent grades, instead of the 10 cent and 15 cent grades.

I did not know that spunk was a commodity until I saw it named in the free list of the Underwood bill. I am glad that spunk is on the free list, for the hosiery manufacturers will need all they can get for the next few years.

Woodrow Wilson and other Democrats have repeatedly said legitimate enterprise need not fear. Yours' are legi-

timate enterprises. You have no trust, no combination to keep up prices to put restraints on trade.

Years ago some states repudiated their bonds because the party in power did not approve of the way money had been borrowed and spent, thus defrauding the innocent investor in those bonds. To ruthlessly tear down the levees of protection, indifferent to the disaster wrought, is as dishonorable, cruel and unjust.

Mill Conditions and Market Reviews.

SOUTHERN MILL SITUATION.

(*Special Correspondence*).

Interest among Southern mill men during the past month has been centered chiefly in the proposed action on the cotton tariff schedules.

When the bill before Congress was announced, an almost universal protest went up from cotton manufacturers, for the cuts proposed in cotton schedules were far more drastic than the schedules prepared by the cotton manufacturers themselves, which schedules represented severe cuts in many lines.

The mill men interviewed by your correspondent are united in the opinion that the industry in the South will be seriously affected if the proposed bill is made a law. Many go so far as to predict all kinds of dire results; others, while agreeing that damage will be done, express the belief that after the new administrative policy becomes fixed, conditions will not be so bad as they appear in advance.

"I still have great hopes in President Wilson," says R. S. Reinhardt, a prominent spinner of Lincolnton, N. C., "and cannot believe that he will advocate a reduction of the tariff on cotton goods greater than was agreed upon by Mr. Underwood and our tariff committee, which was 25 per cent."

"In case the present tariff goes through as outlined, it will seriously affect, in my opinion, every cotton manufacturer in the United States. It is a foregone conclusion that we cannot hope to compete with foreign countries on account of labor conditions and our machinery being very much more expensive, not saying anything about our expensive selling costs."

D. A. Tompkins, of Charlotte, advocates the need of a tariff commission of from 15 to 30 members to "investigate one item of the tariff at a time."

Stewart W. Cramer, new president of the American Association, had this to say:

"The rates on Schedule I, Cotton Manufactures in the New Tariff Bill (H. R. 10) introduced in Congress on Monday last by the Ways and Means Committee of the House of Representatives, have been the subject of most careful examination and investigation by the members of the American Cotton Manufacturers' Association in convention in Washington during the past few days.

"The consternation felt upon the first examination of those rates was only equaled by the amazement that followed a comparative analysis of the different classifications embraced in the schedule. The rates on single yarns in the gray are the same as those for the most highly processed and finished yarns advanced in manufacture, apparently unmindful that the very processes of twisting plied yarns are technically but the equivalent of spinning, upon which the duty is based. It is a well-known and acknowledged fact that protection is necessary to at least compensate for the difference in the cost of spinning at home and abroad; yet no additional allowance is made for the duplication of that process! The same criticism may be made of the cloth rates: only 2½ per cent extra is allowed over rates on the simplest and plainest weaves for the most elaborate and complex constructions of the most highly finished yarns—an entirely insignificant amount!

"The proposed new rates are about one-half those suggested by this association, and our rates were offered in sincerity and good faith as the lowest the cotton industry could stand without certain definite injury, and furthermore, our rates were very large reductions from the present rates, and offered to meet the expressed intent of the Ways and Means Committee as to a competitive tariff. The only explanation possible is that the new rates were offered to draw the fire of cotton manufacturers with a view to ascertaining by the opposition developed whether the rates we suggested really were bottom; therefore, our association, both as an organization and as individuals, have again made most urgent protests against the new rates. If cotton manufacturers will promptly and persistently follow this up, Congress cannot afford to ignore the obvious inconsistencies in the new bill, as well as the inadequacy of its rates.

"The passage and enactment of the bill as introduced would cripple the whole cotton industry of the United States."

Several manufacturers, who have always voted the Democratic ticket, predict that if the proposed bill goes in, its authors "will go out" at the next election.

S. B. Tanner, former president of the American Association, R. M. Miller, Jr., and many other prominent manufacturers and former officers of the association, are equally strong in their condemnation of the unfairness of the proposed cuts in the schedules.

Despite the howling of hard times to come in case the proposed tariff legislation is enacted, various manufacturers demonstrate their faith in the future of the industry by investing freely in additions to their mill properties, and in extensions.

The Cones, at Greensboro, N. C., have announced that they will spend in the neighborhood of $150,000 to $200,000 in the construction of a department for indigo dyeing and printing the indigo blue denim, used in the manufacture of workingmen's garments. Formerly the products of this concern—the Proximity Manufacturing Company—have been shipped to a distance for finishing. The company owns the plant formerly operated by the Van de Venter Carpet Company, which consists of a main building 300 x 50 feet, dye house, and other buildings. Machinery for the new department has been ordered for shipment in about a month. This initial equipment includes machinery for indigo dyeing in the piece and for printing and extracting. This is a new departure for the South.

A large, new dye house is to be constructed at the East Durham Cotton Mill, Durham, N. C.

Long Island Mills, of Long Island, N. C., have increased their capital from $50,000 to $100,000.

A report from Bessemer City, N. C., states that instead

of closing down, as reported, the Harborough Mill will discontinue the manufacture of cloth, and will make yarns only.

The Ozark Mills, of Gastonia, N. C., plan the erection of an additional building, 75 x 100 feet, three stories high with basement, and the installation of 10,000 spindles.

Charter has been granted the Wendell Knitting Mills Company, Inc., of Wendell, N. C. Capital stock is placed at $200,000. They will operate 50 knitting machines, to be increased to 100 later.

Fire destroyed the Burlington Hosiery Mill. The capital was $30,000, and it is understood $15,000 in insurance was carried.

These are a few of the building news items of the past few weeks, but they show that regardless of the tariff, mill men are anticipating continued good business and are making plans to take care of it.

NEW ENGLAND MILL SITUATION.

(*Special Correspondence*).

It is many years since New England cotton manufacturers were so little inclined to look hopefully upon the prospects of the cotton industry. The repudiation of the suggestions of the American Cotton Manufacturers' Association by the framers of a cotton schedule in the tariff laws and the adoption of a schedule that cannot fail to impede progress in the production of fine goods in this country have led to expressions of pessimism from some of the strongest men in the business. No tariff bill that the American people will stand for will destroy the investment, but it is apparent that it is going to take some time to convince the mass of people that a needlessly low schedule has been adopted to bring about healthy competition.

In the early days of the period in which the Ways and Means Committee were considering rates and classifications it was intimated that before the cotton manufacturers of the country would submit to gross injustice at the hands of Congress the country would be roused up as it has not been roused in all the agitation that has followed the inception of the Payne-Aldrich bill. At this time steps are being taken by committees of manufacturers from the South and North to make a completely new presentation of the facts to the Senate Finance Committee and to individual senators who are not willing to become parties to the enactment of a cotton schedule so lacking in wisdom as the one reported to the House. Meetings of committees were held in New York and Boston in the last days of April and a plan of campaign was tentatively agreed upon whereby the forces that have misled certain members of the Ways and Means Committee on cotton manufacturing affairs will be fully and thoroughly exposed. The case is not believed to be so hopeless as some of the manufacturers thought it was when the Washington convention adjourned last month.

Sufficient harm has been done to the business sentiment of the country to bring about a slowing down of trade which is expected to continue until the tariff bill is out of the way and the reports from the new crops are discounted. The strong underlying feature in the cloth market is the lack of stocks in first hands and in the hands of wholesale customers. Tight money has done much to hasten the readjustment of conditions in some financially mismanaged concerns, but in the absence of an over-production of cloths or yarns, no serious set-back can occur.

The labor conditions are still exasperating all through the section. A strike conducted by the I. W. W., has been on in the Draper works at Hopedale, and minor troubles are heard of from time to time in different centers traceable to the vicious spirit of this syndicalist organization. The lack of firm orders in the woolen and worsted industries has caused the shutting down of about 50 per cent of the machinery and that is tending to increase the help available for the cotton mills. Places like Fall River and New Bedford are still short of operatives, however, and the difficulty does not lie in wages or in general working conditions.

The machine shops and foundries are generally employed insofar as regular forces are concerned. There are some good orders in hand. At the same time the conditions are not conducive to the placing of new business in any large way, and many of the orders now being worked on will be completed by the time a new tariff bill becomes operative. There are so many patented machines made nowadays in the mill machinery concerns that have no counterpart in foreign machinery that neither cotton manufacturers nor machinists are willing to concede that the tariff alone will injure them. The tariff as it may be applied to the mills may affect them, but the general opinion is that most of the large machinery organizations will stand up as long as any industry will withstand the shock that must come when so long a step toward free trade is sanctioned.

The printers are relatively busy. The Windsor and North Adams works are particularly active on fancy crepes, voiles and fancy prints. The Pacific is doing a large business on percale, draperies, and a few specialties like Serpentine crepes. The American and Algonquin have been running about 80 per cent of their capacity on staples and percales. The new American draperies are proving good sellers for this fall season and in this department operations at night are noted. The belief is general among the printers that next year will be a better one for printed goods than any seen in the past few years.

Gingham mills are still open for more business than is being offered to them. They are completing their spring orders but are making less than usual headway on repeat orders. Good trade is reported on some few lines of ginghams, but the great bulk of the output is not being called for in a way to offer a satisfactory profit. Chambrays, colered yarn ratines and low-priced yarn-dyed shirtings are being turned out steadily.

The jobbers of the country were considerably disturbed by an announcement to the effect that one large bleached goods house would offer its well-known brands on memorandum to be charged at least ¼-cent a yard lower. This led to other houses following a similar course and it naturally weakened the position of the whole market. Gray goods had been falling off in value, but the finished goods markets as a whole were standing up well, up to the time of the announcement referred to. Business on bleached and brown cottons has been in moderate volume.

The jobbers are buying goods about as they require them for immediate distribution. They are not prepared as yet to buy for fall, and selling agents, as a rule, are not forcing them, as they believe the trade will be healthier later on, if business is not forced until the cotton crop is above ground. The fine bleached goods trade still continues below normal. Sheets and pillow tubings are still sold to arrive in most cases.

Denims, tickings and colored duck have not fallen in value to any appreciable extent. No changes in quotations

have been made, and the general situation is that goods are behindhand on delivery and few spots come to hand for sale. Crashes of better grades are actually higher than they were at the beginning of the month. Quilts are now being sold liberally for fall by men on the road. The lower tariff does not seem to trouble buyers. The fancy quilts of the Bates Company are especially good sellers this year. Satin quilts are better sold than crochet or dimity styles.

Fall River still reports stocks of nominal proportions, not more than 700,000 pieces of all kinds of goods being held by the hundred mills there. Prices on print cloths have fallen away to a level of 5 cents for wide 64s and 3¼ cents for 27-inch 64 x 60s.

The chief interest lies in the fine and fancy cotton trade of the New England section. A particular drive has been made at this industry by the tariff reformers. The mills are not seeking business in any volume to run beyond September, and as a rule most of the mills have plenty to do until that time. The fabrics that are being called for most freely are fancy ratines and fancy crepes. Voiles, poplins, cords and shirting fabrics are being made in fair-sized quantities. There has been a sharp revival in the demand for silks and cottons in plain and fancy weaves.

More jacquard weaves are being turned out at the present time than ever before in the history of the American industry. The vogue of brocade effects accounts for this. All jacquard looms that are available are engaged and mills have most of them under order as far ahead as January. Three of the largest concerns making silks and cottons have every available jacquard loom running on silk jacquards to retail better than 25 cents. The crepe weaves have become very popular and bid fair to become the important cloth for spring, 1914.

There is an unusual demand for curtain materials in fine and coarse yarns. The printers and finishers are calling for them, although much of the advance business has already been booked. Some of the New Bedford mills are making a particular success of leno effects in fine yarns. Scrims, nets and cretons are also being made in quantities.

The bleacheries have been busy, but at this writing they are quieting down a little except in the instances where mills own their own bleaching plants. The finishers are being rushed for quick delivery goods, but are not building up much future business. The affairs of the U. S. Finishing Company are very much mixed and do not bid fair to be adjusted in the near future. The creditors' committee is expected to report very soon and nothing is now held out that looks like the extension asked for being granted.

COTTON CROP CONDITIONS AND A REVIEW OF THE MARKET.

(*Contributed Exclusively to* COTTON).

BY H. AND B. BEER, NEW ORLEANS.

After having fluctuated within a narrow range, price levels remain about the same as they were one month ago. The steadiness of the market has been due to a light demand on the part of the trade, and limited offerings on the part of Southern spot holders; the one feature offsetting the other.

The continuance of the poor foreign demand is reflected in a further loss in exports compared with one year ago, shipments to Europe now figuring only 7,436,000 bales, against 9,550,000 to even date one year ago, now figuring 2,114,000 less than last year, whereas one month ago the decrease was only 1,700,000 bales.

As a result, the South which, one month ago had about as much cotton to market as was marketed during the balance of last season, has now about 400,000 bales more cotton to dispose of than was marketed after this time last season, or about 1,767,000 bales, compared with 1,371,000. These conditions are reflected in the large stocks held at the 30 counted interior towns, 510,000 bales compared with 365,000 last year.

If the weather conditions are favorable for the making of another large crop this year, and they have been favorable to date, it looks as though it will be almost impossible for the South to dispose of the large stocks of cotton on hand except at lower prices, particularly with American mills, North and South, well stocked with cotton, the tariff question considered, and the poor demand from Europe, especially from the Continent.

Takings by Northern spinners during the past week were only 25,000 bales, against 54,000 for the corresponding week one year ago, and Southern mills are only credited with having taken 45,000 bales *vs.* 51,000 last year. The total takings by American mills, North and South, thus far this season have only been 4,529,000 bales compared with 4,456,000 to even date last year, or only 73,000 larger than last season. At this rate it will not be long before takings by American mills will be less than last season. In Europe mills have taken of American cotton thus far this season only 6,133,000 bales, against 7,016,000 to even date one year ago, or 883,000 bales less than last year.

According to cable report, European mills still hold more cotton than they held at this time last year, and the United States Census Bureau reported on April 14 that the stock held by American mills on March 31, was 1,932,000 bales. This is fully four months' supply, sufficient to last until the new crop begins to move next August.

The agitation over the new tariff measure is becoming more general in all sections of the country, and is accountable for the restricting of business in the leading markets. Conservation is the order of the day, owing to the fear of the proposed drastic reductions in the duty being put into effect for the purpose of reducing the cost of living. It will probably be many weeks, perhaps months, before the matter is finally settled. In the meanwhile, business will be unfavorably affected by reason of the uncertainty of the future.

While the New England mills, those producing the finer makes of cotton goods, will be hard hit by the big reduction in the tariff, manufacturers of all descriptions, North and South, will suffer by the proposed tariff reductions on all manufactured goods, and the South and West will have to bear the burden by the placing of sugar and wool on the free list, as well as all farm products. Under the circumstances the American manufacturer and the American farmer will have to shoulder the whole burden in the interest of cheaper living.

In the meantime the South has been educated in the belief that the world will need all the cotton it can produce. Present prices are comparatively high, and are the incentive for the making of preparations for the planting of a record acreage, which already has made good headway, so much so that cotton is already up in the southern half of the belt and is being chopped to a good stand in Southwest Texas and in the southern portions of Alabama and the South Atlantic states. With good weather henceforth, these conditions, it is said, will give new cotton in July.

The theory exists among many people to the effect that there will not be enough of American cotton to go around until the new crop comes on the market in volume next September. This conclusion, if the commercial crop is to be 14,500,000 bales, would seem to be an erroneous assumption, since the most conservative deductions show that with the record carry over at the close of last season, this year's crop will provide as large a supply as was furnished by the record crop of 1911-1912.

	This Season	Last Season
World's vis. & invis., Aug. 31-12	3,602,000	1,980,000
Commercial crop, est.	14,500,000	16,138,000
Indicated total supply	18,102,000	18,118,000
World's consumption, est.	14,515,000	14,515,000
Indicated World's vis. & invis. Aug. 31, 1913	3,587,000	3,603,000

To our mind, based upon the data at hand, and after making liberal allowances, the distribution of this supply this season will be about as applied below. It will be seen, therefore, that owing to the poor export demand from Europe, it is probable that the visible and invisible supply in the United States on September 1, next, will be about 500,000 bales larger than the record surplus on hand on corresponding date one year ago, while Europe, including the larger supply of foreign cottons, will have a stock about the same size of last year's record. For example:

AMERICAN COTTON. UNITED STATES.		
Mill stocks, United States, Aug. 31, 1912	This Season 350,000	Last Season 200,000
Visible stocks, U. S., Aug. 31, 1912	365,000	287,000
Supply from 1912 crop, est.	6,000,000	5,452,000
Total supply for U. S., est.	6,715,000	5,939,000
Consumption for U. S., est.	5,500,000	5,225,000
Vis. & invis. in U.S. Aug. 31, 1913, est.	1,215,000	714,000

	EUROPE AND CANADA.	
AMERICAN COTTON.	This Season	Last Season
Mill stocks, Aug. 31, '12	1,900,000	980,000
Visible stocks, Aug. 31, '12	987,000	513,000
Imports, est.	8,500,000	10,687,000
Total supply, Europe & Canada	11,387,000	12,180,000
European consump'n., est.	9,015,000	9,290,000
Vis. & invis. Europe, Aug. 31, 1913, est.	2,372,000	2,890,000
Vis. & invis. U. S., Aug. 31, 1913, est.	1,215,000	714,000
Indicated world's vis. & invis. Aug. 31, 1913	3,587,000	3,604,000

These figures do not include the larger supply of Indian and Egyptian cotton than last year in Europe which, yesterday, was 350,000 larger than one year ago.

Though we get a small share of the undyed yarn imports from Argentina—$1,300,000—none of the $880,000 worth of dyed yarn imported comes from the United States.

THE YARN MARKET.

The yarn market for the past month has been unsettled but with a fair amount of business transacted. The opening of the month found single combed yarns in better demand than two-ply and the underwear manufacturers looking for light weight yarn. There was a strong demand for 24's and 26's cones. Hosiery manufacturers were buying principally 14's to 30's. There were signs of slowing up in the carpet industry and weavers continued to buy from hand to mouth. Some lines were doing a good business but men's wear manufacturers were not buying freely. It was looked upon at this time as almost certain that there would be labor troubles in the lace curtain trade. Cotton yarn transactions were confined to small lots and most buyers were conservative and did not believe that bottom prices had been reached.

As the month wore on there was a fair demand for single-combed peeler yarns from both hosiery and underwear manufacturers for both prompt and future deliveries. The takings covered a wide range from 12's to 40's Southern and Eastern yarns. Southern frame spun cones sold on a basis of 26 and 26½ cents for 10's. The demand for fine two-ply yarns was very light as the demand for the cobweb variety of hosiery has fallen off and consumers have indicated a desire for more durable goods. This was to have been expected and it has been prognosticated in these columns for many months that the demand for the excessively sheer hosiery was little more than an extended fad. There was some decline noted during this interval of the month, and it was predicted that prices would go to still lower levels before the bottom was reached.

The Washington convention of the American Cotton Manufacturers 'Association, which had just closed, was a gloomy one and yarn market quotations and trading to a certain extent reflected the feelings of the affected spinners. There was so much tariff talk for political purposes, that it had a detrimental effect on the market, and business everywhere, and was reflected by the price sheets and trading records of the period. The weavers were still buying from hand to mouth, but the demand was sufficient to prevent any accumulation. There was some demand for knitting yarns at this period of the month, owing to the strikes of the carders in the central New York knitting section, but taken all in all, yarn sales were slow with prices irregular.

As the month closes the prospects for a good business in carded yarn fabrics for another year at least looks promising. The tariff still continues to be a disturbing factor inasmuch as many knitters are refusing to buy more than sufficient supply for a couple of weeks at a time, but others are apparently over their fright. The manufacturers who use wool or worsted yarns in the make-up of their goods are buying less freely than those who are depending entirely on cotton for their material. Bankers have advised the manufacturers to be cautious and the money situation is not at all satisfactory, but underwear and hosiery manufacturers are busy on former orders and with occasional duplicates coming in there seems to be good prospects in all knitting lines for some time to come. 14's to 28's Southern frame spun cones for prompt delivery are in demand. There is also a demand for 12½ per cent gray blends, principally in 14's and 16's cones for the sweater trade and sales are being made on a basis of 24½ cents for 10's.

The latter part of the month also showed quite a strong demand for 24's and 26's Southern frame spun cones by

underwear manufacturers for fall delivery. These numbers are scarce when they should be nominally plentiful. Because of this, some manufacturers fear that they will be scarce at the beginning of the next light weight season and to be sure of a supply, they are buying for October, November and December deliveries. Only a few days ago a yarn dealer sold 350,000 pounds for fall delivery. There is a moderate demand for single-combed yarn from the underwear and hosiery trade. Southern frame cones are generally held on the basis of 26 cents for coarse numbers, while for 30's and finer, some spinners are asking the same prices that dealers can sell mule spun for. Sales of 14's Southern frame spun cones were made for 27 cents, 16's for 27½ cents, 18's for 28 cents, 24's for 29 and 29½ cents. The demand for 40's two-ply and finer combed peeler is very light. Southern spinners are, however, holding 50's two-ply at 48 cents, 60's two-ply at 53 cents to 54 cents, 70's two-ply at 65 and 66 cents, and 80's two-ply at 73 to 74 cents. One dealer intimated that prices on fine two-ply combed yarn were sure to drop and that spinners who are in touch with market conditions know it but are trying to hold prices up as long as possible. This feeling, however, is because of the belief that the raw material prices are to go lower later in the season as the prospects for a large cotton crop for this year seems especially good. Another opinion advanced is that if the new tariff law is enacted as the legislators hope to have it enacted, so that it could be signed some time in June, they will probably make it take effect by the first of July and it is believed by many that this will effect the prices of fine combed yarns. Weavers continue to buy from hand to mouth, and while many spinners still quote 20 two-ply warps at 22½ cents and that price is being paid by manufacturers for spot delivery, there has been some signs of weakening. The demand for 40 two-ply warps and skeins is light and some sales have been made at 33 cents for future and 33½ cents for spot delivery. Spinners are asking as high as 45 to 46 cents for 50's carded warps, although combed yarns can be bought for 46 and 47 cents. What the market will be during the next few months is something of a puzzle and for that reason many buyers are holding off. However, spinners are making up their minds to keep a stiff back and do the best they can.

Recent quotations on the Philadelphia market follow:

Southern Single Skeins.

4s to 8s	18½@19	16s	21½	
10s	19½@20	20s	22	
12s	20½	26s	24	
14s	21	30s	25	@25½

Southern Two-Ply Skeins.

8s	19	24s	24½	
10s	20	26s	25	
12s	20½@21	30s	25½@26	
14s	20½@21	40s	33½@34	
16s	20½@21	50s	43	
20s	22	60s	49	@50

Carpet and Upholstery Yarns in Skeins.

8-4 slack	20½	8-3-4 hard twist	18	@18½
9-4 slack	19½			

Southen Single Warps.

8s	20	20s	22	
10s	20½	24s	23½	
12s	20½@21	26s	24	
14s	21	30s	25½@26	
16s	21½@22	40s	32	

Southern Two-Ply Warps.

8s	19½@20	24s	24½	
10s	20½@21	26s	25	@25½
12s	21 @21½	30s	26	
14s	21½	40s	33	@34
16s	21½@22	50s	42	
20s	22 @22½			

Northern Two-Ply Carded Peeler Skeins.

20s	25	36s	34	
22s	25½	40s	38	
24s	26	50s	44	@45
26s	26½@27	60s	49	@50
30s	27½@28			

Two-Ply Combed Peeler Skeins.

20s	20½	50s	45	@48
24s	31	60s	53	@55
30s	34 @35	70s	61	@65
40s	39 @42	80s	70	@74

Single Combed Peeler Skeins.

20s	29	40s	40	
24s	30 @30½	50s	45	@46
30s	34	60s	55	@56

Southern Frame Spun Yarn on Cones.

8s	20 @20½	18s	23	
10s	21	20s	23½	
12s	21½	24s	24½	
14s	22	26s	25	
16s	22½	30s	25½@26	

THE KNIT GOODS MARKET.

Trading in knit goods during the past month has been quiet. The causes for this quietness were somewhat varied. Chief among the causes was the fact that a large majority of knit goods buyers had already placed orders with the mills and the mills are working on these orders already booked. Another deterant feature was the publication of the Underwood-Wilson tariff bill in the early part of the month. Another probable cause of the quietness was the fact that many buyers believed the cotton market is to an extent over-inflated and are looking not only for lower cotton but lower yarns and knit goods in consequence.

The early weeks of the month were marked by a disastrous flood in the Ohio Valley states. This affected the production of union suits to a marked degree. The Piqua mills have a large production of this class of goods and inasmuch as there promised to be serious shortage during the present season the delayed production on the part of these and other mills were looked upon as a serious matter. Fall duplicates began coming in and one large concern is said to be receiving considerable business of this kind in men's ribbed goods and fleeces.

The opening of the month in the hosiery end seemed to indicate that there would be an unusual number of shades selling this season particularly in the higher grade lines of ladies' silk hose. As many as forty different shades not being unusual with some styles. It seems to be the idea to make colored hosiery to match almost any shade of gown that the ladies may decide upon wearing. Some of the newer shades now selling are china and cadet blue, cardinal, Helen pink, Nell rose, tangarine and coffee. Champagnes and grays still continue in evidence to a large degree. Hosiery mills at this time were doing their best to get out goods fast enough for the present season, but deliveries were behind in many cases. There has been considerable difficulty in many sections in the securing of enough suitable labor. Warmer weather brought out quite a considerable duplicate of business in the fine gauge goods.

The middle of the month found the underwear business moving along regularly and it was believed that the proposed tariff changes would have little effect on this section of the trade before spring, 1914. This is probably due to the extremely strong position of the business, both in this country and Europe. Not only have the mills been hard hit by the shortened hours of labor in certain sections, but the scarcity of labor still continues to be a large factor in the situation. There was a meeting of underwear manufacturers in Amsterdam, N. Y., during this section of the month and the consensus of opinions expressed was to the effect that the Underwood-Wilson tariff bill, which reduces the duty on underwear from 62½ to 25 per cent or below, if enacted, would be ruinous to the knit goods industry. In the hosiery end during this section of the month deliveries for immediate use was the real feature and while tariff changes were discussed on every hand by mill agents and buyers, it was reported that so far it had not raised an issue.

The strike of carders in the spinning departments of the knitting mills located in Utica and Cohoes forced the knitting mills to go into the market for cotton yarns to a certain extent. Several prominent buyers from the West were on the look-out for merchandize and one of them was reported as having stated the fact that the tariff was not in his mind and if he could see goods for spring, 1914, with prices showing but slight changes, he would do business then.

As the month closes the market still remains quiet. Members of the National Association of Hosiery and Underwear Manufacturers are preparing for the gathering of the clans in Philadelphia on the week commencing May 6. Considerable interest is always manifested in this convention and exhibition where all members of the knit goods industry get together, and there will probably be much tariff discussion among the members, as was the case when the American Cotton Manufacturers' Association convened at Washington earlier this month. A number of interesting features have been outlined for discussion during this convention and it is practically certain that it will be attended by knitters from every section of the United States.

COTTON MANUFACTURING.

MAKING YARN STRONG AND UNIFORM.

(*Contributed Exclusively to COTTON*).

BY WILLIAM SHAW.

In order to be able to properly manage a cotton mill or a part of a cotton mill, a man should possess a goodly grain of personal efficiency. He should fix firmly in his mind what he would like to do for the best interests of the mill, and then move straight to the goal.

He should keep his mind on the things he would like to perform, and he will soon find himself unconsciously seizing upon the opportunities that are required for the fulfillment of these desires. The mental effort and the thought he holds will be hourly transforming him into that progressive individual—a man with a purpose.

Many readers of COTTON may ask themselves, what is the goal in a cotton mill?

My answer is, strong, uniform yarn.

When a man has charge of a cotton mill, and possesses the personal efficiency, something similar to the following thoughts are bound to occur to him: There are about 140,000,000 fibers in a pound of ordinary cotton. The average mills use about 50,000 pounds weekly. The many doublings of laps causes the fibers to be drawn past one another during attenuation many times.

With these facts in mind, he is bound to watch his automatic feed boxes closely, for the reason that the thought he holds urges him to see that they are filled alike as much as possible, in order that the feed be gradual instead of in spots.

I am not aiming at the mills that have bale breakers and automatic conveyors, for the reason that they get very nearly the same proportion of cotton at each feed, but I wish to point out instead, how some persons in charge of automatic feed boxes will fill them to the top and then have a "lay-off," so to speak, and allow them to run low.

Let us consider how much this effects the uniformity of the cotton thread. We have discarded the stationary flat card, for the chief reason that the carding surface was not great enough, as we have doubled the number of working flats on the revolving flat cards. To the writer the same reasoning is applicable. When the automatic feed boxes run low, it reduces the working surface of the feed apron. If the automatic feed boxes are kept full, or nearly full, the breaker laps will be much heavier than when the boxes are allowed to run low. Therefore, if we allow the boxes to run low, we have part of the lap heavy when the box is filled, and light when the box is low. Many mill men rely on the eveners of the intermediate and finisher pickers to remedy this faulty sheet of lap, but I have never found an evener sensitive enough to act on the stock passing through until at least a part of the faulty stock it is supposed to correct has passed beyond the action of the evener motion.

Here is where personal efficiency comes in, because the mill manager that thinks knows that as the fibers are drawn past one another until drawn down to a fine thread that even if they are doubled 50,000 times in the process, that the thread will not be uniform, for the reason that there are only a few fibers in the cross section of fine yarn. In order to make my point clear, think how the laps are doubled much more in fine mills than in coarse mills. Is it not because they fear faulty places similar to those I have pointed out?

The trouble is, we are all more or less careless. Some will even put down as silly the claim that the slipping of the lattice apron in the automatic feed box will effect the uniformity of the yarn. But is not the slipping of this small apron the same as irregular feeding of the box?

Personal efficiency will discover evils, and at the same time find a remedy. To remedy these defects, have the lap weighed by the yard and also in the bulk. This is a great deal of trouble, but it takes trouble to make an even thread, and that is the chief aim of every cotton manufacturer. Weigh the lap by the yard and it may be a surprise to find the variation from one yard to another; weigh the card sliver, and it will cause amazement at the variation.

When weighing the card sliver it may disclose a variation of five to ten grains (which is common), then size the finished drawing sliver and find perhaps a variation of only two grains. How much evener this finished drawing sliver would be if the picker room was given the greatest care and attention and a nearly even sheet of lap made.

It must not be forgotten that the sheet of lap will vary from one yard to another, even if the automatic boxes are filled regularly and no slippage takes place, but the defective portion will not be so bulky or thin, and in such a case the eveners are more sensitive, for the reason that the two extremes in which the cone belt is shifted laterally along the cones are not so great. Let us assume that a lap is broken off when the box is full and placed on the lattice apron to take the place of a lap of which the portion running out was made when the cotton in the automatic feed box was low, the minute that the heavy sheet passes under the action of the evener motion, the resistance then becomes so great that the slipper shifts the cone belt almost

instantly from the small end to the large end of the driver cone. It must be admitted, however, that even if the evener is sensitive, a certain amount of heavy work has passed. Let us assume that only five inches has passed, (when, as a rule, it is nearer one-half yard) then if we have a draft of 90 on the card, we have $5 \times 90 = 450$ inches of heavy work. This defective work is of course remedied to some extent by the doubling. That is why we double the strand at every opportunity, but even if it is remedied, it is not remedied enough and we will find a certain amount of fibers missing in the cross section of the yarn, which will give the yarn a bad appearance. The mill manager should think of those millions of fibers, and so arrange his machines and drafts, that they will follow one another, and only separate the fibers by the art of drafting instead of by irregular feeding, slippage and friction.

Just think of it! With a draft of 100 on the card, one-half inch of defective lap will make 50 inches of defective work. Of course, this is merely an illustration, and is simply mentioned to show that the picker room department is more important than is regarded by many mill men, and should receive eternal vigilance. However, if we are unable to correct the faulty sheet of lap within the small margin of one-half inch, we should strive to keep it within one-half yard at least. Occasionally the cone belt is found to be in such a bad condition, such as being too slack or tight, or having many piecings and uneven in width, that the evener is made entirely ineffective.

In most mills, the finished drawing sliver varies about two grains to the yard, very seldom more. This can be remedied and the variation made much less, if the picker room received the attention it should. However, we will assume that the variation of the finished drawing sliver varies two grains to the yard, and for convenience we will assume that the draft on the slubber is 5, on the intermediate 5, on the fine speeder 6, and on the ring frame 10, doubling two into one in each case, with the exception of the slubber. We will assume the drawing sliver to be 50 grains to the yard or .166 hank. Then:

$5 \times 5 \times 6 \times 10 = 1{,}500$ total draft. $2 \times 2 \times 2 =$ 8 doublings. $.166 \times 1{,}500 = 249{,}000 \div 8 = 31.12$ yarn.

With a variation of two grains on the heavy side, we have $8.33 \div 52 = .160$ hank drawing. $.160 \times 1{,}500 =$ $240{,}000 \div 8 = 30$'s yarn, or a variation of about 1.12. Now, with the above in mind, and not forgetting that the finished drawing sliver varies only two grains, what causes the light yarn in the following sizings, the yarn supposed to be 30's? 29.25 — 31.63 — 28.50 — 30.85. Here is a variation of three numbers, and the above sizing was obtained from a mill that enjoys the reputation of making even yarn. I have seen in my mill experience a variation of six numbers, and in extreme cases, more.

There are, no doubt, many readers of COTTON that will agree with the writer in the above confession. What causes this light yarn? If it is accepted that there is only a variation of two grains in the finished drawing, then the trouble is not in the preceding process up to the slubber. If any reader thinks I am wrong, and that in his own mill he can find a variation of more than two grains to the yard in the finished drawing sliver, I would advise that he at once overhaul the picking and carding, as there is something radically wrong.

We cannot lay the cause of this light yarn to the drawing rolls, because we are forced to admit that the front rolls must receive what stock the back rolls convey to them, and although the roving or yarn may be faulty in spots, the work can be made heavier by the retardation of the front top leather roll, but never any lighter. In other words, you may have the production of a roving or yarn full of thick and thin places, but the weight of the yarn can never be lighter than the draft indicates, but of course it can be weaker.

Is not this subject a serious one for us all to consider?

If the reader has the opportunity to make any test on a fly frame, let him stop the frame, and then lift a bobbin gear slightly and turn it about one-half turn towards the presser finger, or, in other words, turn the bobbin gear so as to cause a certain amount of slack on the end in question. Next, start the frame again, and watch and see how this slack is taken up immediately. If you understand the winding-on, will not the following questions suggest themselves? Why should this slack be taken up so soon if the relationship of the surface speed of the front roll and bobbin be equal? Does this excess surface speed of the bobbin, that takes this slack up immediately, strain the roving and cause the light yarn in the above sizing? Does this excess surface speed of the bobbin only take place when the frame is started or stopped? Let us take the above questions apart and examine them, and then let us frame up the formula.

In my article on "Defective Yarn and Roving," which appeared in COTTON for February, 1913, I quoted a part of a letter received from the agent of one of the best shops building fly frames. A part of his letter is worth repetition, and is as follows:

"Another factor in this complicated problem is that the pressure of the paddles on the bobbins is nearly sufficient to keep the bobbins up to speed after the frame, as a whole, has been put up to speed, even though, at that minute, the train of gears driving the bobbins from the jack shaft were disengaged. It seemed so to us that this would be true; we tried it and demonstrated it to be so."

What is said by this expert is enough to answer the first question, but as it may not be understood by the reader, I will try and clarify it more. The heavy presser rod attached to the hollow leg of the flyer is made heavy so that when the frame is up to speed, the rod will have a tendency to follow a straight line, but as it is attached to the hollow leg of the flyer, it is compelled to change that state. The pressure in this way is increased at a point underneath the eye in the paddle, through which the end passes to the bobbin.

To make it clear, let us quote a part of "Newton's Laws of Motion." "Every body continues in its state of rest, or of uniform motion in a straight line, except insofar as it is compelled by force to change that state." Continuing, he says: "When a body, originally at rest, begins to move, we conclude that force is acting on it."

What is "rest?" The answer must be that the term is relative. Absolute rest and absolute motion are terms to which we find it impossible to assign a meaning. All the above can be applied to the functions of the presser rod on a flyer, and it will be seen that when the flyer is at rest, there is no pressure on the surface of the bobbin. Therefore, the pressure of the paddle on the surface of the bobbin is regulated by the speed of the flyer, or in other words, by force. So we must conclude that it is due to this change of state, when the slack is taken up as pointed out in the first question.

When the frame is running slowly, the pressure is slight, and the tension then, instead of being between the

paddle and the surface of the bobbin, where it should be, becomes between the surface of the bobbin and the bite of the front rolls. To prove this, notice when a speeder is running with a tight tension, it will not give much trouble only when the frame is stopped and started again, which shows what I am pointing out here is true. Where, then, is the practical man that can deny that we have two tensions on all the present types of fly frames?

When the frame is up to speed and the maximum pressure reached, the tension then becomes between the paddle and the surface of the bobbin, and the minute the frame begins to run with a tight enough tension to cause an end or two to snap, when the frame is stopped and started again a few more are sure to come down, and we find the tender looking for the fixer to change the rack gear. But what about this change in tension? When the frame up to speed gives a perfect tension, does stopping and starting the frame strain the work?

Can the writer be blamed for conceiving this idea? If the conditions described will take up the slack on the end in question in so short a time, do they not strain other ends? I think so. I fear little contradiction for the reason that it must be admitted that the pressure of the paddle on the surface of the bobbin destroys the relationship of the surface speed of the front roll and bobbin when the speed of the flyer is greatly diminished. Mr. Dunn, the inventor of the "Dunn Flyer," must have had the above in mind, or ideas on similar lines, when he made his improvements in flyers. The chief feature of this flyer is in having a weighted upper presser rod that causes a certain amount of pressure, even when the flyer is in a state of absolute rest. This feature has a tendency to keep the tension between the paddle and the surface of the bobbin where it should be, and during the change in speed of the flyer, tends to prevent the tension coming between the surface of the bobbin and the bite of the front rolls.

When these flyers are used, the bottom cone, instead of being convex, must have a straight outline. Before this invention we arrived at the following explanation for the top cone being concaved and the bottom convexed. If a bobbin increases in diameter from 1 inch to 1⅛ inches, the proportionate increase is 1/9 part of the total, but if a bobbin increases from 3⅞ inches to 4 inches, the proportionate increase is only 1/32 part of the total diameter. It must be clearly seen that the equal increase of 1/8 inch in the diameter of the bobbin is only equal in addition, and is very unequal in proportion. It is this inequality in proportion, resulting from equal increments of bobbin diameter, that has to be produced in the outlines of the cones in order to obtain correct winding on, and the result is the concavity and convexity of the cones. This goes to show the influence the pressure of the paddle has in the true formation of cones.

It will be remembered that a short time ago a correspondent in COTTON claimed that the slippage of the front roll on one of his speeders caused the ends to slacken. No one could see the point clearly. They naturally thought that by the front roll slipping, the tension should become tighter.

From what I have pointed out it must be admitted that when the existing relationship of the surface speed of the front roll and bobbin will take up the amount of slack in so short a time, that it must strain the other ends, or at least, some of them. This proves that a strand will stand quite an amount of pull before breaking. This is proven also by an end breaking and running into an adjoining end, which will run for many laps without breaking, although the diameter of the bobbin is much larger than on all others.

So, in the case of "W. B. W.," when the front roll was slipping and causing the ends to become slack, we can arrive at no other conclusion than the following:

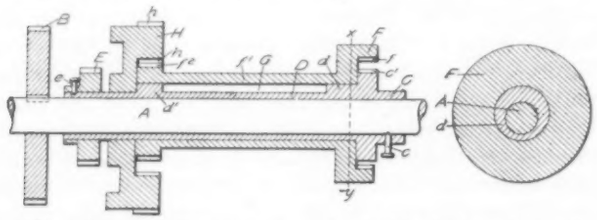
The slippage in the roll in question must have been gradual instead of intermittent, and as a certain amount of pull existed at every traverse, the diameter of the bobbins were reduced by this pull, and this of course destroyed the relationship of the surface speed of the front roll and the bobbin, hence the slack ends. Another way to reason out the above problem is to let a roll run dry, or put dirt or cotton under the saddle of the front roll, and it will be found that the bobbin receiving the strands from this roll, will not increase in diameter in the same proportion, as all other ends where the front top roll is free to revolve. Remove the matter under the saddle and oil the roll after it has run a few laps in the above condition, and it will be found that the ends operated by this roll will run slack. That is why I mentioned in my earlier article that the rolls should not be oiled during the building of the set.

In summing up what I have already stated, we can arrive only at the following formula. When the frame is up to speed, the cone belt is then only a regulator, as the pressure of all the paddles on the surface of the bobbins controls the excess speed. When the speed of the frame is slackened and the pressure of the paddles decreased, the cones then are called on to rotate the bobbins. When the cone belt is at the starting point of a set, it is on the large end of the top cone, and on the small end of the bottom cone, and if the driving belt is shifted on the tight pulley too suddenly, the ends will surely slacken, that is why the layers nearest the bobbin are always heavier than those at the finish of the set. When the cone belt is shifted laterally as the set fills, and the cone belt reaches the center of the cones, the ratio then begins to change, and we find the belt working to the large end of the bottom cone, and to the small end of the top cone. Now, picture what happens when the frame is slackened in speed and the pressure of the paddles on the bobbins diminished. Owing to the ratio having changed, the cone belt will not slip, and of course, when the speed of the frame is decreased and the cone belt is called on to drive the bobbins the excess speed then becomes too great, and a certain amount of stretch takes place, which, although slight, it is enough to make the roving at the ending of the set lighter than at the beginning. This change of ratio is to a certain extent, what takes up the slack already pointed out. The slack is taken up faster when the set is nearly filled than at the beginning, as can easily be demonstrated. Moreover, no trouble is had with a cone belt slipping at the ending of a set; it is always at the beginning. Can anything be plainer than the above? Are not the conditions on all fly frames very unequal?

The figure shown in the article is that of the latest invented differential motion. The intention of this invention was to remove the consumption of power from the cone belt, and if the reader will closely follow the explanation, he will realize that this motion will drive the bobbins, whether the frame is on high or low speed.

Referring to the figure, as the jack shaft (A) revolves, it carries the spur gear (C) with it, and as this gear meshes with the internal gear (f), it causes sleeve (f^1) to revolve. Spur gear (f^2) cast on this sleeve and in mesh

with the internal gear (h) causes the bell gear (H) to revolve. As the gear (E) is driven from the cones, it is only a medium for altering the speed of the bobbins. When commencing to wind a new set of roving, gear (E) makes the same number of revolutions as gear (C). For the present the cams cast on sleeve (D) may be considered as not existing. As the speed of the cams decrease, it causes the internal gear (f) to circle around gear (C) and as gear (C) has 27 teeth and the internal gear (f) 30 teeth, spur gear (f^2) 27 teeth, and the internal gear (h) 30 teeth, it causes bell gear (H) to lose 1/5 at every revolution.



Now, let us follow every part of this device, from the beginning to the ending of the set. At the beginning of the set gear (C) and gear (E) make the same number of revolutions, and the device as a whole acts as a clutch, or may be considered as one piece. As soon as the traverse has traveled its full length, and the rack shifted the proper amount to suit the diameter of the strand, gear (E) is made to retard, and gear (f) circles gear (C), and by the difference in the number of teeth in the gears (C), (f), (f^2) and (h), gear (H) is made to lag behind the jack shaft (A) 1/5 every revolution, and so on, to the end of the set.

It will be seen that this motion differs from other compounds, for the reason that as spur gear (C) is in mesh with internal gear (f), that the minute the jack shaft is started, gear (f) is taken around with it, whether gear (E) is connected to the train of gears to the bottom cone or not.

Again, it can be seen that as the cam sleeve (D) has such a large area of bearing on the jack shaft (A), it has a tendency at all times to follow the surface speed of the jack shaft. Therefore, with this motion, the cone belt serves to check the speed of the cam sleeve instead of driving it, as on other differentials, as if gear (E) was not checked it would revolve at the same rate of speed as that of jack shaft (A).

At the beginning of a set there is of course very little roving on the bobbins, and as the set fills, they become heavier, and the cone belt is called on to drive this extra weight. With this device, as the cam sleeve retards a little at each completion of the traverse, the consumption of power is equalized. In other words, the heavier the bobbins become, the slower the cam revolves, and the slower the cam revolves the more tendency the jack shaft has to drive the cam faster, so in this way the difference in the speed equalizes the difference in the weight of the bobbins.

A coneless speeder has never been made successfully up to the present time, for the reason that when a disc, or two discs, were used to substitute the cones, the friction was too great, because the bobbins had to be driven by frictional contact. With the above motion, a disc is used to govern the speed and not to drive the bobbins. Of course, there must be an unequal rack arrangement to suit the inequality in proportion, resulting from equal increments of bobbin diameter, but this I am not at liberty to describe.

The disc arrangement is very simple and ingenious, and has received more or less favor for the usually coarser work of flax spinning, however, as far as the writer knows, discs are not used at all for the fly frames in cotton spinning, and I judge that the reason is owing to friction.

I believe that much improvement is needed on all fly frames, which I claim was the cause of the very light work described, which is conceded to be quite a common fault and also the cause of many ends breaking at the warpers and looms.

VARIATIONS IN SPINNING NUMBERS.

(*Contributed Exclusively to* COTTON.)

BY JOHN CURWEN.

In preparing this article, I am well aware that much of what I shall say has been attended to at one time or another by other writers, dealing more or less thoroughly with this subject. The gravity and importance of the matter, however, impressed me with the idea that it cannot be kept too much before the attention of those whose business it is to be responsible for the accuracy of their work. As up to the present time there is no literature bearing upon this subject published in book form, an occasional article will not come amiss to new readers, textile students and embryonic mill men. Furthermore, the fact that variations arise from so many sources, and from a lack of attention to such small and seemingly minor details, would in itself justify an effort in this direction, provided the pointers are those of experience and written with the single object of helping to eliminate as far as practicable this very serious evil.

Whichever mill one may go into, whether it spins fine or coarse numbers, variation in a greater or lesser degree will be found. At certain times, in some mills, the prevalence of this complaint is so great as to drive the responsible officials almost distracted. Often, where this evil obtains, spinners will be sure in their own minds that they have attended to everything that could have any relative bearing upon the matter, yet they do not seem to have reached a satisfactory solution of the trouble. Occasionally, for a little while, things seem to move along smoothly enough, and then suddenly there comes a complaint from the office or superintendent that the counts are varying; that numbers have gone all awry.

At some mills the "irregularity" seems to break out periodically, occurring without any conceivable cause at certain intervals, now in an aggravated form; at another time the disease is somewhat lessened or weakened in its attack, but still in evidence. There are other mills that very rarely get any very great (comparatively) extremes in "irregularity," but jump about from one side of the "standard" to the other side, but seldom close enough to boast of even being approximately correct. When any of the above conditions obtain worry and anxiety of mind follow, and to conscientious and very sensitive natures, sleepless nights also, until the evil modifies or is corrected.

I wish to observe, before proceeding further with my subject, that when I used the word "corrected," as qualifying counts, I used it advisedly. In real practice we never do get uniformly and absolutely correct standard sizing, particularly from a single thread, and we only get approximately correct counts from four to eight cops sized. I refer here to coarse numbers and few doublings. With increased doublings and finer numbers we come nearer correctness to "standard."

When a complaint has been made about irregular yarn in the spinning room, take action at once. Give the roving of the various hanks a thorough sizing and report anything that may be found wrong with the numbers of the card room bobbins. If the card room material has shown up fairly even then set to work and size up systematically the numbers that have been mentioned as being uneven, if the trouble is not general. Take note of peculiarity in the variations, such as whether the tendency is more on the heavy than on the light side, or *vice versa*. Having become satisfied that the evil does exist, immediately set about correcting it.

The differences in the weights of the separate sizings will themselves, sometimes, naturally assist in helping locate the trouble. For instance, heavy sizings may point to neglect in oiling the rolls, or to long piecings in creeling; light sizings may originate from stretched roving caused by a blunted creel peg, or the roving guide hole being choked with a wad of cotton, or from being otherwise stretched in the passage from creel to roll. Get the second hand and section men together and tell them what the trouble is: that the cause or causes must be located; help by instruction as far as you are able, where, when and how to look for the grievance; if you have formed any opinion yourself of where the trouble may possibly lie. After everything has been seen to that can possibly, even in a remote degree, have any influence in the making of bad yarn, and with little or no improvement, then as a last resort adopt the following measures:

Take the frames, one at a time, and have them thoroughly cleaned. See that the steel rolls are well scoured; roll stands wiped clean, and the leather rolls carefully examined. Let the frame be perfectly level in its length and across the roll beam, with the roll stands in exact line to prevent binding, wearing of the roll necks and bearings. The distance of the spindle rail from the roll beam should be equal at every point and level both ways. The distance from the top of the spindle to the guide wire should be about 2 or 2½ inches. The spindle should be set exactly in the center of the ring, and the guide wire set immediately above the center of the spindle. Lifting rods thoroughly plumb and set so as to give a uniform vertical movement along the whole length. The setting of the leather rolls is a very nice point and too much attention cannot be paid to their adjustment with the bottom steel rolls. The centers of the back and top rolls should be parallel with the bottom steel rolls, whilst the front top roll is set a little in advance of the bottom roll. Draft gears should be examined and any worn or defective gears discarded. Studs that are worn or wobbly should be replaced with new ones.

Some causes operating to produce uneven yarns in card room machinery repeat themselves in the spinning room. Irregular tension between nip of roll and spindle. Saddle not sitting square or lying more or less diagonally across the rolls, thus interfering with the free movement of the rolls. Unequal diameters of the bosses or shell rolls caused by leather cots of different thicknesses being used. The larger of two bosses raises one end of the roll, and allows the sliver to be pulled through without being properly drawn. An accumulation of lint and fly in the roving guides will stretch the roving as it passes through, making soft and light yarn. Damaged or crooked steel rods also produce unevenness. Loose leather cots; piecings of leather cots running in the wrong direction, and grooved or channelled rolls must be avoided. Too slow speed, requiring heavier travelers. It is better, within reasonable limits, to increase speed and lighten the travelers. Waste around bottom of creel pegs, or creel peg points blunted, producing unusual tension on roving. Improper weighting of rolls. Spinning bands lacking uniformity, causing a marked difference in the twist and diameter of the yarn. Draft and other gears should be nicely set and run smoothly. Correct weight of traveler should be used, discarding all that are worn and looking out for worn and loose rings. Waste on creel; waste gathered around the top and bottom of skewers; defective skewers; broken creel steps, and careless creeling, allowing single to run where double roving is used and long piecings.

Oiling is an important factor, and should never be neglected. More irregular yarn than a person would imagine springs from this source alone. Good oil is an essential requisite. Oiling ought to be carried out in a systematic manner and supervised, more particularly on the spindles and rolls. Creels out of line should be watched for, or sagging and allowing the skewers to penetrate through the holes and impinge against bobbins or other obstacles on the creel. These, together with a hundred and one other little things, which any observant overseer can detect, militate against the production of a good, sound and level thread.

Empty bobbins ought to be of equal diameter; all new bobbins should be gauged or calipered and the faulty ones rejected. Any difference here will materially affect the counts. Full bobbins of roving packed or stored away for any length of time, or allowed to lay on the creel for too great a period, get soft and open up in the roving, therefore becoming softer and lighter, especially so in the first few layers, and consequently more liable to stretch in unwinding, producing a lighter thread than would be the case with newly made roving. Again, some mills may perhaps change their mixing every week, and it is a well-known fact that notwithstanding the greatest carefulness, bobbins from different mixings rarely size exactly alike. The sizing of one mixing being on the lighter side, and of the other, perhaps, on the heavy side. The difference between the two sometimes becomes considerable.

The writer, some years ago, had an experience that conveyed to him a practical lesson, concerning weekly mixings of different marks of "Middling A" cotton. As it bears upon this subject of "variation," I make no excuse for introducing it in this place, feeling sure that it will be of some benefit to others who may have similar trouble, even if the cases are not precisely parallel. It should be observed that the bobbins in the creel were six hank single roving, from which were spun 32's warp and 40's filling. It took the bobbins just about a week to run off. The material produced, warp and filling, was worked into cloth in the immediate neighborhood. Complaints, now of the warp and again of the twist, were continually coming into the office, and everybody concerned was having an exceedingly hot time of it. I had not been long at the place, as carder, perhaps four or five weeks, and the prevalent opinion, as is generally the case in such emergencies, was that the card room was to blame for the bad work. One of the duties of the assistant carder was to size all roving bobbins, six bobbins from each speeder, three from the front row of spindles and three from the back row, selected indifferently from various parts of the machine. The sizings were taken three times a week. In looking over the sizing's book for the then present and the previous week's report of tests, I

failed to detect anything that could in any manner account for so much irregular work, except that one week's work was a shade heavier than the other, but not to the extent of a tooth in the draft gear.

Being a great believer in the old axim that if you want a thing done right, do it yourself, I decided to personally size up every machine from drawing frame to speeder. The result of my sizing left me still at a loss to account for the differences in the cop sizings, which certainly varied in counts in a strangely inexplicable way. Becoming satisfied that the uneven work did not emanate in a direct manner from the carding department, I concluded to consult the spinner and explain to him the results of my investigation in the card room. We talked the matter over a little while and afterwards I suggested that we look through the spinning rooms. They had mule spinning. After a while I noticed a boy who was creeling behind the mules, going from one end of the machine to the other putting in a bobbin wherever one was running out. It was this boy's duty, amongst other things to creel bobbins for four mules, and he was kept constantly on the run. By this method of creeling, bobbins of this week's mixing were running alongside of bobbins of last week, and if there was any accumulation on creels, perhaps also with those of the two weeks previous stock. Reasoning in my own mind what I have hinted above, about variation coming from different mixings, I suggested to the spinner that he should alter the method of creeling. At first he did not seem to fall in with the idea. Eventually, however, I prevailed upon him to adopt the plan that he should have one-half of a mule creeled at a time; that is to say, the bobbins of one half of the mule were so arranged that they would all be creeled in about two hours, or three at the outside. Then, after the new bobbins had been set in and running for some time upon the spindle, eight cops were to be taken from the spindles and sized, and any variation from standard noted, and if necessary, changes made to meet requirements. The first pair of mules that were altered satisfied the spinner that the idea was a good one, in more respects than the one intended. The spinning improved, because the creeling was located and the work could be better watched. All spinners are aware that the work is more tedious during creeling than at most other times. When the change had been made in all the mules this particular annoyance was considerably diminished. Of course, I am of the opinion that if double roving had been in use, the bad work would possibly have been modified, or perhaps entirely eliminated; yet it is possible that two fine bobbins as well as two coarse bobbins will be found running into one end, even where double roving is in practice. At the present time this system of creeling is in universal use in England. After every creeling the material is sized and when necessary the draft gear changed. Such a plan has been found needful in England, where yarn is spun by one firm and woven into cloth by another. Mills that weave their own spinning being the exceptions to the rule. Such a system of sizing and creeling I would recommend to those spinners who desire to keep close tab on their work. This paper, however, does not exhaust the subject. The evils that follow in the wake of bad yarn would furnish matter sufficient for a more pretentious paper. However, if a perusal of this attempt to handle a rather difficult subject will draw the attention of spinners to its gravity and seriousness, a useful purpose will have been served.

KNITTING.

HOW THE STRENGTH OF YARN VARIES WITH THE COUNTS.

(*Contributed Exclusively to COTTON*).

BY WILLIAM DAVIS, M. A.

The yarns used to make the tests on twist described in previous articles were each subjected to ten tests for strength and the average taken, the counts varying from 3½ cut to 60 cut. 3 cut = 3 × 200 = 600 yards per 16 ounces. The yarns selected were as far as possible of the normal weaving type and all intended for use in the warp of the cloth. They were carded and corresponded with each other in quantities for the various counts. It will be interesting to examine those individual tests to see whether a relation between the size of the yarn and its strength can be arrived at.

Counts	Average strength.
3½ cut	86 ounces
5 cut	49 ounces
10 cut	25 ounces
15 cut	25½ ounces
20 cut	17 ounces
26 cut	12½ ounces
30 cut	10 ounces
36 cut	6½ ounces
40 cut	5¼ ounces
50 cut	4 ounces
60 cut	3 ounces

The resultant curve shown at Fig. 1 is very interesting as the points when plotted as shown join into an almost geometrical curve, the only point lying away from it being the strength shown by the 10 cut yarn. From the geometrical form of the graph it would indicate that the strength of the thread varies inversely as the count, and such a curve could be constructed on the results of experiments on any class of yarn and the curve could be of practical value in indicating the strength necessary for any counts of yarn to work satisfactorily on loom and frame.

From the figures given in the foregoing articles, it will now be interesting to compare the effect of twist on the yarns by comparing the strength of the single yarn with that of the maximum strength when doubled.

Col. I.	Col. II.	Col. III.	Col. IV.	Col. V.
Counts	Average strength of Single yarn ounces	Maximum strength of double yarn ounces	Percentage of increase by doubling the yarn	Percentage gained by doubling yarn
15	25½	65	155	55
20	17	38	123½	23½
26	12½	30	140	40
30	10	28	180	80
36	6½	19	192	92

40	5¼	20	281	181
50	4	16	300	200
60	3	12	300	200

The fourth column, which shows the percentages of increase of strength produced by making the yarns two-fold, is of the greatest interest. The two yarns before twisting may be taken as affording 100 per cent increase on the strength of the single yarn, so that the net practical advantage resulting from twisting the yarns together as compared with having the two yarns untwisted is shown clearly by Column V. The advantage gradually increases as the size of the yarn decreases. Thus by folding two yarns of 60's count together, we gain an advantage of 200 per cent in strength, whereas in the coarser 20's yarn, the advantage is 23½ per cent.

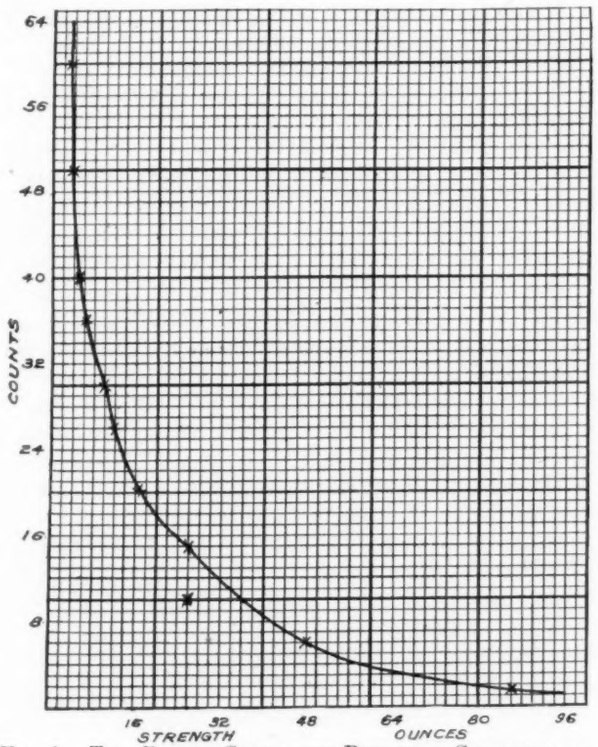


FIG. 1. THE POINTS SHOW THE BREAKING STRENGTH AND THE LINE INDICATES HOW EVEN THE RESULTANT CURVE IS, WITH THE EXCEPTION OF THE 10'S YARN.

To see how the points of maximum strain vary with the counts of yarn, we shall now trace the figures given in Columns I and III in a graph chart. The points so plotted arrange themselves almost geometrically in the form of a curve similar in shape to that just obtained for single yarns which leads us to a similar conclusion regarding the strain and such a curve could be constructed for any class of yarn so as to be of considerable practical value. This curve is shown in Fig. 2.

TO TEST EFFECT OF DYEING ON YARNS.

There is probably no subject which causes more controversy between weaver or knitter and spinner like the loss of strength so frequently resulting in dyed yarns. The dyer maintains that the material has not been injured, whilst the weaver points to his webs where excessive breakage is taking place. The methods outlined for twist can be successfully applied in such cases and given the necessary testing apparatus, the influence of dyeing can be rapidly and accurately calculated, so as to place the matter entirely beyond dispute. The test is further of value as indicating the influence of any dyestuff on the fiber, and so may serve as a guide to the selection of the one which injures the fiber least. These are only a few of the instances where our methods may lead to a decisive result in comparing one procedure with another as regards influence on the fiber.

Example I.—The first example is one where a woolen yarn, 17 cut, has been dyed five different colors in the yarn, namely, crimson, black, green, tan and dark brown, and each was tested in turn and compared with the original white yarn submitted. Ten tests of each were made and the averages tabulated as follows:

Color	Strength lbs.	Stretch Inches	Variation % in Strength	Loss % in Stretch
White	1.4.	1.6		
Crimson	1.1	.6	21 3/7 loss	62 1/2
Black	1.2	1.1	14 2/7 loss	31 1/4
Green	1.5	.75	7 1/7 gain	53 1/8
Tan	1.	.9	28 4/7 loss	43 3/4
Brown	1.3	.8	7 1/7 loss	50

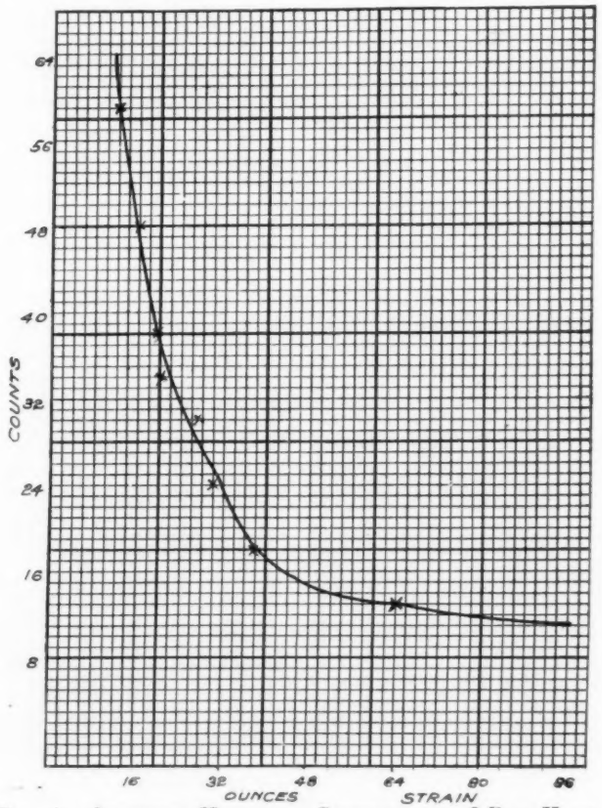
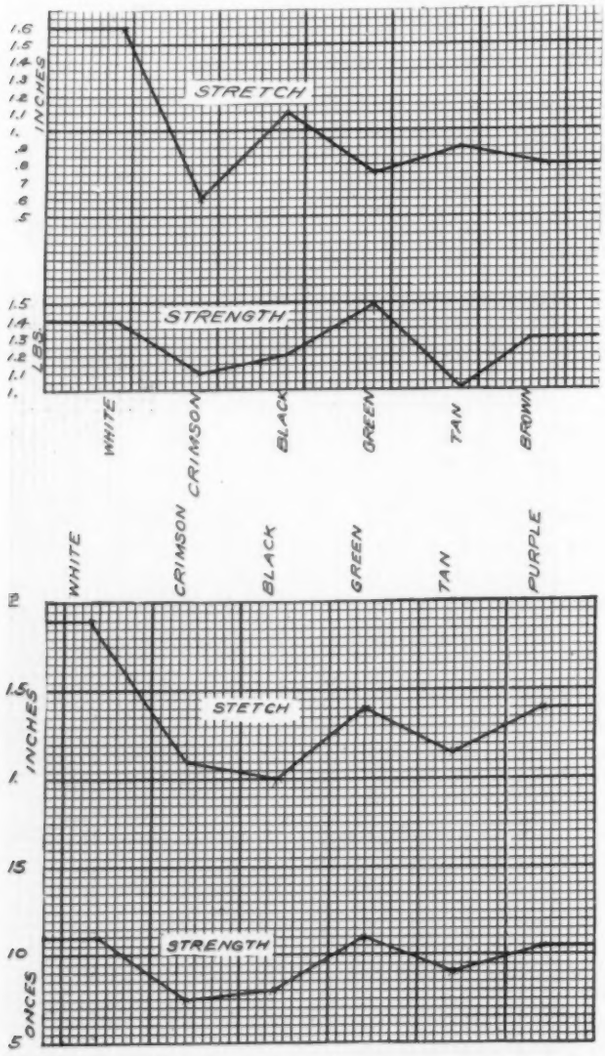


FIG. 2. SHOWING HOW THE STRENGTH OF 2-PLY YARN VARIES WITH THE COUNTS. AS IN FIG. 1. THE POINTS SHOW THE BREAKING STRENGTH.

The above table shows the percentage of loss in strength to be greatest in the case of tan dyed yarn which amounts to 28 4/7. Whether it would be workable on the loom or frame would depend on whether the white original had strength in excess of ordinary working requirements, otherwise much breakage would result. The loss is least in the case of the brown where the number stands at 7 1/7 per cent. In the case of the green, there is actually a gain of 7 1/7 per cent in strength through dyeing. The reason for this will be found in the last column where the same color registers the high loss of 53 1/8 per cent in stretch, so that it is very doubtful whether the increased strength will be

TABLE SHOWING RESULTS OF SIZING.

Counts and Style of Yarn	Strength Before Sizing	Strength After Sizing	Percentage Gain in Strength	Stretch Before Sizing	Stretch After Sizing	Percentage of Stretch Variation
2/40's Cotton	7.3 ozs.	9 ozs	18 8/9%	.7-inch	.5-inch	28 4/7% loss
2/40's Botany Worsted	9.2 ozs.	9.9 ozs.	7 %	2-inches	2.8-inch	40 % gain
2/14's Crossbred Worsted	24 ozs.	25.4 ozs.	5 5/6%	1.3-inch	1.8-inch	38 6/13% gain
29 cut Cheviot Woolen	11.3 ozs.	15 ozs.	24 2/3%	1.3-inch	1.9-inch	46 % gain
8 cut Blackface Woolen	2.6 lbs.	3.1 lbs.	16 %	2.8-inch	3.6-inch	28 4/7% gain



FIGS. 3 AND 4 SHOW THE EFFECT OF DIFFERENT COLORS ON THE YARN, EACH TWO SQUARES HORIZONTALLY EQUAL ONE NUMBER OF YARN.

of any real advantage in working. Along with adequate breaking strain a working yarn must possess adequate yield or stretch, in default of which the yarn will snap readily in weaving. The loss in stretch is even greater in the crimson, where the figure stands at 62 1/2 per cent loss. The real reason of the loss in elasticity is to be found in the fact that the yarns under consideration are of woolen material and in dyeing have been subjected to a prolonged boiling to give fastness and depth to the color. This high temperature, combined with the movement of the yarn in the dye liquor to cause it to dye evenly has caused the material to felt, the fibers interlock, and the yarn shortens in length and becomes densely matted in its fibers. Consequently the free movement of stretching can no longer be induced among the fibers and elasticity is reduced to the extent shown in the table.

Example II.—The second sample tested for the influence of dyestuffs was a finer woolen yarn of 30 cut counts, but in place of the brown a purple was introduced and the following table sets forth the results:

Color	Strength Ounces	Stretch Inches	Loss % In Strength	Loss % In Stretch
White	12	1.9		
Crimson	7 1/2	1.1	37 1/2	47 2/19
Black	8	1	33 1/3	47 7/19
Green	11 3/4	1.4	2 1/2	26 6/19
Tan	9	1.15	25	39 9/19
Purple	10 1/3	1.4	13 8/9	26 6/19

The table shows the crimson yarn to have lost most in dyeing, the percentage loss in strength being 37½ and that of stretch 42 2/19. The dyeing of the green has but little effected the yarn and the loss in strength is just over 2 per cent. The graph curve shows the relative results.

A series of similar tests on dyed cotton yarns would assuredly not give the same excessive loss in stretch, but the influence of the different dyestuffs and different methods could readily be compared and the best selected.

We shall conclude this series of experiments with the results of tests made on weaving yarns sized and unsized. In this department, also, frequent discussions take place as to the relative efficiency of various sizing agents, the questions most frequently asked being, which gives the greatest strength to the thread; which is best for cotton and which for woolen yarns, and what strength of the solution gives the best results?

The solution of size in each of the above tests was that in general use for the type of yarn selected. The percentage in gain of strength is found to be greatest in the cheviot woolen yarn and the cotton yarn comes next. The cotton, however, is the only yarn which has lost in stretch, the woolens all showing a corresponding gain.

The Nippon Yusen Kaisha of Japan will, it is expected, declare a dividend of 10 per cent per annum for the half year ended September last. The company is considering a scheme for the improvement and extension of its coasting and foreign services, especially the extension of the latter. As the first step, says the Asahi, the company has decided to replace the 8,000-ton steamers now on the European line with vessels of from 10,000 to 19,000 tons, and the company has already ordered three steamers of 12,000 tons and two of 10,000 tons from the Mitsu Bishi and Kawasaki yards. The company has also ordered four modern style cargo boats of 5,000 or 6,000 tons from England for the Indian service. All the steamers ordered from Japanese and English yards are expected to be completed by about April next.

DYEING, BLEACHING AND FINISHING.

WASTE OF MATERIAL USED IN COTTON MANUFACTURING.*

BY ANDREW FISHER, JR.

Prosperity breeds wastefulness in most every line of business. Elimination of waste in cotton manufacturing generally takes place first in the less prosperous concerns.

This paper deals with the subject of waste in cotton mills, not visible waste which is sold to the junk man, but invisible waste which is constantly being eliminated by encouraging scientific investigation into the various processes of manufacturing.

If two dollars are being spent where only one is necessary it is generally recognized that one of those dollars is being wasted.

Some years ago it was thought that a reduction of wages of 10 per cent means a net saving of that much. It was soon found, however, that this is absolutely wrong in many cases. Many successful concerns today employ the highest class of help available and constantly endeavor to make each man feel that he can make more money by strict attention to his work, thus raising his efficiency.

It is not my intention to dwell at length on elimination of waste in labor, but it might be worth while to mention that the more closely this phase of wastefulness is studied the more clearly the fact is established that a great many short cuts may be made which not only effect large savings but also make it possible to raise wages. The *esprit de corps* is a very important factor which is helped immensely by this sort of work, if properly carried on.

In considering waste in raw material which we will briefly discuss, it must be admitted by all students of the subject that the American cotton manufacturer is pretty much "on the job." We lie awake nights figuring how to make every bit of cotton go the limit. However, it seems to the writer that the machine used by the Department of Agriculture to measure accurately the length of the cotton fiber will prove of great interest and value in checking the various processes of manufacture. We may be able to get our carding and spinning down a little finer and possibly save both cotton and labor in so doing. It seems to me that this is one more step in the application of science to industry and this of course is a great factor in raising the efficiency of all kinds of manufacturing.

Science is supposed to be a synonym for common sense and the more common sense we apply to manufacturing the less waste will be permitted.

The particular department of manufacturing in which the writer has worked has been in bleaching, dyeing, finishing and warp sizing.

A large item in cotton mills is starch and materials used in warp sizing. No great amount of careful experiments have been performed to determine exactly how much starch is necessary to produce maximum efficiency in weaving.

The size should be made so as to produce a film which will not dust off in the loom, but will be tough, smooth and flexible. The necessary ingredients, besides starch, are tallow or some grease will prevent the warps from sticking to each other or to the drying cylinder on the slasher, also some substance like calcium chloride which will attract moisture enough to keep the size from drying out and becoming brittle. There are, at the present time, tests being made at the New Bedford Textile School which will show the results obtained in weaving yarn which has been sized with various kinds of sizing materials, none of which are patented. Most of the patented materials are of more value to the man who sells them than anyone else, and many of them contain as much as 95 per cent of water. Obviously, the water is gone as soon as the yarn passes over the drying cylinder and thousands of dollars are being wasted in this manner every day.

If the question of warp sizing could be made the subject of numerous investigations in the textile schools, much money would be saved in weaving. A badly sized warp is a pretty expensive proposition to handle, and in the writer's opinion, this is a wholly unnecessary form of waste which now exists. What are our textile schools for if not such work as this? Two young graduates could be set to work for a few years, if necessary, to make experiments along this line and at a very slight expense. Ten thousand dollars expended in this way would bring back to the cotton manufacturers of the New England states alone, ten times that amount the first year the results were applied. There is no excuse for secrets in warp sizing. It is too important a subject to be in the mystery stage.

The waste of materials in dyeing, bleaching and finishing is constantly being eliminated, but there still exists much room for improvement. We may see at present real endeavor manifested among the leading manufacturers in this direction. In dyeing dark shades it is generally customary to maintain a standing bath of dyestuff, to which a small amount of color and chemicals are added before each dyeing is made. This is an old trick to save dyestuff and is certainly an indication that economy is practised to some extent.

Scientific research, however, has not been utilized to any great extent in most dyehouses. The first wash waters often contain large amounts of salts and dyestuffs which might well be saved by evaporating the liquors in multiple effect evaporators. Few manufacturers realize that it is possible to evaporate water for a few cents a ton. Economy in this direction generally starts by the manufacturers being forced into it by the health authorities raising objection to the pollution of streams.

There are many good systems for multiple effect evaporation on the market and the price is not exorbitant.

Waste of starch and finishing material occurs often by unscientific application. Most mill agents and treasurers have no time to make experiments to determine how efficiently the materials are being used in this department. It is obvious that the method of attack in this case is to make first a very careful study of the various styles of goods finished, with a view of determining just how each should best be treated. Usually it is found that the goods can be grouped together in such a way as to keep the machinery all going to the limit. It costs money to have things arranged on the hit and miss principle, and it produces a bad spirit among the help to work at low efficiency.

After the similar groups are arranged and the proper treatment of each group finely adjusted it will be found

*Read before the National Association of Cotton Manufacturers.

that results are much more uniform. Waste from poorly finished goods is rapidly diminished and, of course, profits augmented.

The opposition of the man in the mill is easily overcome, first off, by gaining his absolute friendship. Few men will take any interest in scientific management unless they are made to feel that their cooperation is absolutely necessary. Thus it is seen that waste in the dyeing and finishing of goods is usually the result of dark secrets in methods used. Many manufacturers feel that they must keep everything dark in these departments, although probably no man will ever be able to corner the market on information of this kind.

Another step in the elimination of waste in finishing might well be mentioned here, *viz.*, goods which are highly finished often have to be washed and shrunk before being used by the cutting-up-trade. It really seems too bad to spend money in the mill for starch, softeners, etc., to give these goods just the right feel so that they will meet the approval of the buyer. Of course the mill man has but little chance to eliminate this waste and it must be done by the consumer and the selling house.

Nothing of real value is added to the goods after they leave the loom, but it is safe to say that in a great many cases more money is spent on the cloth after it is woven than before. The inspection, wrapping in neat packages, boxing, etc., are, however, hardly to be classed as waste, because they are practical necessities.

Before closing this paper it seems to me advisable to say a few words concerning waste which exists through ignorance in purchasing supplies used in the mill. It is obvious to the merest novice that where secret methods are employed it is very hard to change from one material to another. It is perfectly possible, however, to find out how much any article is worth in the open market. This is often left to the judgment of a man who has no knowledge of chemistry whatever, and it seems to me that some knowledge of chemistry is absolutely essential to the man who controls the purchase of supplies for a textile mill. Very few chemicals, oils, starches, dyestuffs, etc., are sold under their chemical names. During my experience at the Amoskeag Mills, it was brought home to me very forcibly that most belt dressings, greases, pulley covers, spot removers, metal polishes and things of that sort are sold at about ten times their actual cost to produce.

The dyestuff is worse. The chemical names of most dyestuffs could easily be put on the package instead of some false name. The manufacturers of organic coal tar colors never call them by their chemical names. For example, there are probably at least one hundred different direct blacks on the market, which are nearly the same thing chemically, but are sold at different prices and under different names. Now it is a simple thing to take a sample of dyestuff and hand it to one or two reputable concerns and say, "Gentlemen, I am paying 28 cents a pound for that dyestuff and I usually buy five hundred pounds a year. If you can give me the same thing for less money I would be glad to buy fifty pounds for trial." That is surely a fair proposition and no one can complain that they have not had a fair chance to compete. The next step is to try out the sample of the new color. No dyer can afford to be constantly changing his formulas for the sake of saving a few dollars a year on colors. He should, however, have his work so arranged that he may easily try out new colors which are presented to him as better or cheaper than the ones he is using. In this way he keeps abreast of the times. If a color is found to be cheaper or better than the one in use it should be submitted just as quickly as possible, but not until it has been carefully tested for fastness to various tests which should vary according to the uses to which the fabric may be expected to be put.

It is an excellent plan for all mills to keep posted on the results of all such work by the purchasing department.

If a dyer or finisher or boss dresser does not know the value of the things he uses he cannot be expected to attain a very high efficiency. On the other hand, if he is made to feel that his cooperation is absolutely necessary, little waste will exist. Higher salaries for men who cut costs or improve the product is absolutely the only way to make them feel that their best efforts are always appreciated.

Effect of Gas Pressure on the Fading of Dyestuffs.

The cause of the fading of dyestuffs by exposure to light and air has been the subject of many investigations in the hope of finding just what are the essential influences which are active in the destruction of the coloring matter. A recent contribution to this study has been made by P. Lasareff, whose experiments were carried out as follows: Collodion films-dyed with Cyanine, Pinachrome and Lepidinecyanine, respectively, were exposed in the visible spectrum of a source of light for periods from 5 to 7 minutes in a chamber in which it was possible to control the pressure of the air. This pressure was varied in the different tests, ranging from 12 to 754 mm. of mercury. The change of color was observed spectrophotometrically. The results seem to demonstrate the fact that the bleaching or decomposition of the color increases in amount with an increase in the pressure of the air, and this is probably accounted for by the higher concentration of oxygen in the air at the higher pressures. On plotting the values obtained in the form of a curve, it was found that the lines representing the variation in the velocity of the reaction with the pressure did not pass through the junction of the coordinates, indicating that decomposition of the coloring matter would proceed with measurable velocity even in an absolute vacuum. To this end experiments were also conducted in a vacuum, and the conclusions were confirmed.

This same investigator has also made a further series of experiments on the fading of Methylene Blue on exposure to light even when oxygen is excluded. It is a generally recognized fact that the fading of most coloring matters is accompanied by an oxidation of the dyestuff resulting in total decomposition. Lasareff, however, has now shown that Methylene Blue will fade when exposed to light even in the absence of oxygen. The experiments were carried out by using films of gelatine dyed with Methylene Blue. When the bleached films were kept in the dark for a few days in the presence of air, the color was restored. In the absence of oxygen the bleaching was the more rapid, and the bleached films when kept in the dark did not show any regain of color as long as oxygen was excluded. Spectrophotometric study of the phenomena showed that the destruction and reproduction of the color do not represent a true reversible reaction; that is to say the colored substance which is produced by oxidation of the colorless substance formed in the bleaching is not identical with Methylene Blue.

We always appreciate the man who thinks as we do.

Practical Problems Discussed by Cotton's Readers

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so indorsed. This department is open to all.

WHERE DOES THE TWIST COME FROM?

EDITOR COTTON:

How few think justly of the thinking few; how many never think who think they do? This can be well applied to "A. C.'s" reply to "Y. L. Y."

"A. C.'s" reply gives every indication that he knows a great many things that are not so on a fly frame, and to help him out and make things clear to him, I am taking the subject in question apart, and below is the formula:

On a fly frame, twist per inch in the roving may be increased either by decreasing the speed of the delivery rolls or increasing the speed of the spindle; there is no other way. The following rule to find the twist per inch should be enough to convince "A. C."

Rule.—*Divide the revolutions per minute of the spindles by the length of roving, in inches, delivered by the front roll in the same time.*

"A. C." says that if "Y. L. Y." will take the trouble to prove what he says on a twist testing machine he will find that the twist is affected so much that the roving will keep breaking, while roving made on the same speeder with three turns around the presser, will run off all right. I want to say to "A. C." that this is all twaddle, and when he tells "Y. L. Y." to use a twist testing machine, it is a confession on his part that he never used one. Twist is inserted from a point at the top of the flyer to the bite of the front rolls, and you can wind the roving around the presser finger once or a hundred times, and you will not increase or decrease the twist per inch. What seems to puzzle "A. C." is that a different number of turns around the presser finger will cause the end to break.

Now, "A.. C.," put on your thinking cap, and you will see clearly that it is not the variation in the twist that breaks the end in question, (as there is no variation, as stated), but it is instead the increasing diameter of the bobbin.

When you increase the number of turns around the presser finger, more resistance is offered to the passage of the strand from the bottom of the hollow leg of the flyer to the surface of the bobbin, so the pull here lays the coils closer and the bobbin diameter does not increase to hold the relationship of the surface speed of the bobbin and front roll. On the other hand, if the turns around the presser finger is decreased, the diameter of the bobbin will increase faster than the rest of the bobbins on the same frame and the end will snap continually, and the only way that a bobbin of this kind can be run is by pulling off a few layers, and then winding the proper turns around the presser finger.

On a flyer-lead frame, as a rule, only two turns are wound around the presser finger, and on a bobbin-lead frame, three turns, but of course the make of flyers often govern the number of turns.

I want to say to "A. C." also that when cones are figured out, the difference in tension between the empty and full bobbin is considered. This variation is of course due to the slight variation in the pressure of the paddle, and the following factors will cause this variation: Slipping of the cone belt, decreasing or increasing the speed of the frame; dry or dirty top rolls; different cotton, and different hank roving, are all factors that will cause a variation of the presser finger on the surface of the bobbin.

"Wash." (New York).

EDITOR COTTON:

In answer to the question of "A. C." on "where does the twist come from?" in the March issue of COTTON, I would say that twist in roving as a rule does not come, but goes. Twist in roving is put in between the top of the flyer nose and the front roll and is governed by the twist gear that is on the frame at the time the roving is being made. A given gear will produce so many turns of twist per inch (calculated), but the calculated twist is never found in the roving when it reaches the bobbin.

The writer has made test after test for twist in roving and as yet has never been able to find the calculated twist in the strand of roving upon the bobbin, (unless excessive twist was being put in). These tests have always been made upon roving that was being manufactured under normal conditions and for the purpose of obtaining a comparison between two makes of flyers of different principles, which will here be termed A and B.

An example of one of these recent tests may prove interesting: The stock being run was 1¼ inches combed Egyptian, and frame was making 3-hank roving; the calculated twist was 1.70 turns per inch, but the actual twist obtained, with the same twist gear in both cases, was 1.64 turns in the flyer A roving, and 1.575 turns in the flyer B roving. Now the amount of twist that one tooth will put in is only three hundredths of a turn in one inch, thus it will be seen that there was a loss of two teeth of twist in the A flyer roving and a loss of four teeth of twist in the B flyer roving.

As the above example is an average result of numerous tests it proves that the twist cannot come from anywhere except between the front roll and the nose of the flyer, and that it depends upon the principle of the flyer being used as to how much twist will be *retained* in the roving upon its arrival at the bobbins.

It has also been demonstrated beyond question that if the proper amount of friction for the winding of a firm bobbin can be applied at the proper place on a flyer, more twist is retained and a more perfect roving is produced.

Quality (Massachusetts).

EDITOR COTTON:

I see an article in the March issue by "A. C." on where does the twist come from? I don't think this is a very hard question to answer, as we all know that the twist is obtained from the revolutions of the flyer and the delivery of the front roll per minute, as for example, 1⅛-inch front roll making 120 r.p.m. and the flyer making 509 r.p.m. $1\frac{1}{8} \times 3.1416 = 3.53$ inches in one revolution. 120 revolutions

would be 120 × 3.53 inches = 424 inches in 120 revolutions. 424 inches divided into 509, revolutions of the flyer = 1.20 turns per inch.

I don't see how changing the laps on the presser from two to three changes the twist, as this lapping process takes place after the sliver has been twisted; and another reason is because this lapping process does not alter the speed of the flyer or front roll delivery, and to change the twist we would surely have to change one or the other.

Now he says roving made on the same frame, one with two laps and the other with three laps around the presser, the one with three laps will run right, while the one with two laps will keep breaking. I don't think this breaking is due to any change in the twist by the difference in the laps, but is due to the increase in diameter of the one with two laps, for it must be remembered that the frame must have been adjusted to suit the one with three laps, (which is the general custom), and the one with two laps will make a softer and larger roving in diameter, and the tension is not suited for this one. As the frame fills up, the cone belt moves toward the small end of cone thus by reducing the speed of bobbin to suit the increase in diameter, for the larger the diameter, the more will be wound on in one revolution of the bobbin. That is the reason as the roving gets larger the bobbins run slower, and the cone belt in moving to suit the three laps does not move fast or far enough toward the small end of the cone to run the bobbin with two laps slow enough, for because of its increase in diameter it winds more than is delivered, and therefore draws the sliver and strains it to the extent that it causes it to break continually. This breaking is not caused by the difference in twist. If "A. C." or anyone else will start two bobbins on the same speeder, one with three laps and the other with four laps and watch them as the bobbins fill up, when the frame has been adjusted to suit the three laps, they will find the one with four laps will be smaller in diameter, and that the sliver will not draw properly through the flyer, but will run slack and curl around the nose of the flyer and will be continually breaking down. "A. C." says by lapping the sliver four times around the presser the roving was so hard and strong that he could take two teeth of twist out. He surely does not want us to believe that. He then had as much twist there as before, for I think the reason that the roving was much harder and the sliver stronger was due to tension caused by the extra lap around the presser, thereby condensing the fibers more closely together, as we all know that the closer the fibers in the sliver are laid and twisted the harder they are to separate and draw apart. I think this is the reason the sliver was stronger, and it was not due to twist. I also think the reason the roving was harder was because of the extra lap, thereby causing more tension in passing around the presser, for the more times we lap a cord around a stick the harder it is to pull it off.

H. E. W. (Maryland).

Argentina is buying $26,000,000 of coal from England. We broke into the English coal monopoly in Uruguay, and our minister and consul there got a $50,000 contract for an American firm, after having coal submitted to chemical tests by the Uruguayan government, which showed it better than Welsh coal. There is no reason why we cannot get some of that $26,000,000 in Argentina away from England also, if we only go after it.

OPINIONS ON THE SOFT BOBBIN QUESTION.

EDITOR COTTON:

Referring to the questions by "A. C." about the bobbin, every mill man knows that only two wrappings around the flyer presser will cause a soft bobbin. As a proof of this, wrap all the ends three times except one, and note the result. As the bobbins on the frame become something like half full, the bobbin with only two wrappings will be a soft oozy bobbin, and the diameter will be larger. The reason for this is that by reducing the wrappings to two, the tension or pull between the flyer presser and the bobbin is reduced, which allows the roving to wind on the bobbin in a slack condition, and this is why the bobbin is soft.

Next, has the bobbin of roving as much twist per inch as the other bobbins? The speed of the spindle and hence the flyer is constant throughout the doff, or filling, of the bobbins, and the twist is always regulated by speeding up or slowing down the r.p.m. of the front roll. Hence we can readily see that the twist per inch in all of the bobbins would be the same if it were not for this fact. As stated, the diameter of this bobbin is increased faster than that of the other bobbins and this of course increases the circumferential speed of the bobbin; therefore, it will take more roving to go around it than it does in the case of the others. For this reason the roving is stretched and made longer and of a lighter hank than on the other bobbins.

The front steel roll delivers the same number of roving per minute to this bobbin that it does to the others, but owing to the increase in diameter and hence the increase in circumferential speed, the roving of necessity will either stretch or break. Now there is the same number of turns of twist per inch put in this roving as in that on the other bobbins, less the number of inches it has stretched. As an illustration, take 36 inches of roving and stretch it 4 inches more, which will be 40 inches in all. We now have 40 inches of roving, yet we have not put in any more twist. The 40 inches has the same number of turns as the 36 inches did have, which would, therefore, be less turns of twist per inch. The same is true of all stretched roving, let it be stretched between the flyer presser and bobbin or in the hands.

A Student (Alabama).

EDITOR COTTON:

In looking over the March issue of COTTON I note that "A. C." wants to know about the causes of a soft bobbin. If "A. C." will follow me closely, I will try to explain this problem presented as I see it.

First, when the roving frame has just been doffed, and the ends all wrapped three times (which is the customary wrapping) around the flyer presser and the proper twist and tension gear on, so as to get an even tension throughout the entire time it takes to fill the bobbin; one end may be reduced one turn from around the flyer presser. The result, if this is done at any time except in the last few layers on a full doff, the roving will be wound on the bobbin soft and spongy from the lack of proper tension between the presser and bobbin. This method of wrapping leaves the fibers more open, hence a soft, spongy bobbin. This bobbin will, after increasing in diameter faster than the other bobbins on account of improper wrapping, stretch the roving and contain thick and thin places. Every mill man knows that the twist will adhere to the thin places, hence the lack of twist in the thick places. If "A. C." will notice carefully he will find this is where his roving breaks.

Second, by wrapping the roving four times around the flyer presser, it increases the tension of the drag between the presser and bobbin, hence a harder or firmer bobbin. Such ends, however, will not run throughout the doff. If the conditions of the machine favor the other ends, this bobbin will soon cease to run satisfactorily, because it becomes of a less diameter than the other bobbins. "A. C." can understand, from this explanation that the result will not be satisfactory and to consider the whole machine so wrapped, would bring on more talk, as the machine builders have thrashed this question out in a thorough manner, the result of their findings having already been given early in this letter. However, the question of the bobbin being firm or spongy does not in this case signify more or less twist, as its appearance would indicate, but merely shows improper origin. Sweeper Boy (Alabama).

ANOTHER OPINION ON STANDARD TERMS.

EDITOR COTTON:

I must confess I am a bit interested in the controversy between "H. E. W." and "B. M. P." and for the life of me I see no benefit, even if the right conclusion was reached. "B. M. P." in this controversy has written something which I suspect all writers will do; he has written twaddle—and so have I, in spots. But let us be broad, and give "B. M. P." what rightly belongs to him. Has he not strived to give us the formula as he saw it? Has he not given us much valuable information? In this case I believe "B. M. P." is wrong—but it is the way he sees it.

Most of us acquire the habit of too often putting words together without troubling ourselves to form the thoughts which ought to correspond to them. It is easy for most of us to form an antithesis between a relative knowledge and a so-called absolute knowledge.

The grave mistake that "B. M. P." made, to my mind, was in consulting so many books. Why not reason the thing out? I never have read a book in my life without finding some kind of a mistake. For instance, I was the first to discover the following mistake in Nasmith's "Cotton Spinning," on pages 341 and 342, paragraph 295. It states: "The yarn, when held at the base of the cone formed during building is, if the full bobbin be 1 3-8 inches in diameter, being carried 'round through a space of 4.31 inches at each revolution. When it is held on the surface of the bare bobbin, which is three-quarters of an inch in diameter, it only travels at the rate of 2.35 inches at each revolution. It is thus clear that, if no retardation of the traveler took place, it would travel during each revolution of the spindle a distance equal in case to that stated. The effect of this upon the twist is easily seen. Suppose that 100 revolutions of the spindles are made in each case, and the rollers deliver five inches of yarn, the effect would be that the traveler in one case would travel 431 inches and in the other only 235 inches. The circumference of the ring being 5.1 inches, this means that the traveler makes 84.5 and 46 revolutions, respectively. There would thus be introduced into yarn 16.9 and 9.2 turns per inch, respectively, at each of these periods, which is a considerable variation."

Notice the variation: 16.9 minus 9.2 equals 7.7 turns I would like to have "B. M. P." look up the above and see how one can be misled by books. Let us figure it.

First, calculate the surface at the beginning of the bobbin and full bobbin. $\frac{3}{4} \times 3.1416$ equals 2.35 circumference of empty bobbin, and $1\ 3/8 \times 3.1416$ equals 4.31 circumference of full bobbin. Now let us reason the first statement, if no retardation of the traveler took place it would travel 5.1 inches or one circumference of the ring, whether on the bare or full bobbin. This is not an accepted theory, but a fact, because the yarn is passed under the traveler and circles the ring in proportion to the amount of yarn that is delivered by the front rolls. Supposing 100 revolutions be taken in each case and the rolls deliver five inches of yarn. The traveler in one case would travel $510 - (5.00 \div 4.31 \times 5.1) = 504.09$ inches when on the larger diameter, and $510 - (5.00 \div 2.35 \times 5.1) = 499.188$ inches when on the smaller diameter. The circumference of the ring in each case being 5.1, the traveler makes $504.09 \div 5.1 = 98.84$ revolutions, losing 1.16 turns in winding five inches of yarn on the large bobbin, and $499.188 \div 5.1 = 97.88$ losing 2.12 turns in winding on five inches on the small diameter of bobbin. We next find the twist $98.84 \div 5 = 19.76$ turns to the inch when the bobbin is large, and $97.88 \div 5 = 19.57$ turns to the inch when the bobbin is bare; $19.76 - 19.57 = .19$ of a turn per inch in difference, and not 7.7, as given.

This illustration is given simply to show how books at times are misleading.

From the writings of "B. M. P." we must admit that he understands carding. However, it will be remembered that on the "Old Lowell Fly Frames," that the twist constant was .03111 factor. You could not call this anything else, for in order to obtain the twist per inch it was necessary to multiply the twist gear by the factor.

Another point that will prove "B. M. P." wrong is in following the rules laid down to find the twist per inch. Follow the train of gears, and it will be found that when the constant is a factor that the twist gear will come over the line, or in other words, among the gears whose sum multiplied together makes the dividend. On the other hand, if the constant be a dividend, the twist gear comes under the line or among the figures that make up the divisor. Therefore, what else can it be called but "factor" in the first case, and "dividend" in the second case?

However, all such discussions bring out knowledge to COTTON'S readers.

Wash. (New York.)

BALANCE TWIST EXPLAINED.

EDITOR COTTON:

I am going to take up "W. C.'s" letter of the April issue, for I certainly must confess that I agree with "X. Y. Z. A." to some extent in regard to some of the questions being of the "catchy" order. "W. C." gives us what he calls the actual practical answer to two of his problems and wants to know if any reader of COTTON can give any approximate rule for finding this answer. If "W. C." has given the actual practical answer, I understand from that that he has gotten them by use of a twist testing machine, and that he has made a slight mistake in the twist of the single yarn.

From the answer that "W. C." has given, I don't think any reader of COTTON, or any one else, could give him any rule to govern both problems, as the one given first will, if used, not give the second, as I will prove.

We will take up the first problem and then the second and see why it would take two separate rules or parts of two rules, to give the answers. The first problem is 2.7

combed Egyptian yarn with 18 turns of twist in the single yarn, and this is twisted 11-ply and his answer, to make the twist be balanced, is between 3.70 or 3.80 turns in the twisted yarn. $\sqrt{}$ 23's = 4.7957 = 18 turns ÷ 4.7957 = 3.75 twist factor in the single yarn 23's 11-ply = 2.09 yarn (equivalent) to be twisted. $\sqrt{}$2.09 yarn = 1.4456 = 3.80 turns ÷ 1.4456 = 2.63 twist factor for twisted yarn. 3.75 twist factor for single yarn minus 2.63, twist factor for twisted yarn = 1.12 or 30 per cent less twist factor for twisted yarn than single yarn.

The second problem was 16's yarn 18 turns per inch of twist in single yarn and to be twisted 5-ply and his answer was about 5.25 turns per inch. $\sqrt{}$16's = 4. 18 turns ÷ 4 = 4.50 twist factor for single yarn. 16's 5-ply = 3.20 (equivalent) yarn to be twisted. $\sqrt{}$3.20 yarn = 1.7888. 5.25 turns ÷ 1.7888 = 2.93 twist factor for twisted yarn. 4.50 twist factor for single yarn minus 2.93 twist factor for twisted yarn = 1.57 or 35 per cent less twist factor in the twisted yarn than in the single yarn.

Now we can see that the same rule would not apply to both problems, as the first problem has 30 per cent less twist factor in the twisted yarn than in the single, and the second would have 35 per cent less twist factor in the twisted yarn than in the single yarn. I don't think this is right, as if 30 per cent less will give it in the first, it ought to give it in the second, and the only reason I think why it does not is that he had not given the proper turns in the single yarn.

I answered a question in the March issue something similar to these and I think if W. C. would get the correct twist in the single yarn and use the rule I gave, it will give him the desired results, for I don't think for every number and ply of yarn there should be a different percentage factor. There may be some little variation from this rule, but I think it would be close enough to use, and what we want is something to base our calculations on and then experience ought to do the rest. I see in another part of "W.C's" letter where he has made an error in figuring where he says the answer by "X. Y. Z. A." is not correct. He says 4.50 minus 20 per cent less twist factor = 3.60 and 3.60 × 3.20 = 11.52. Here he has taken the twist factor and multiplied it by the number of yarn, when he should have multiplied it by the square root of the number of yarn and then the answer would be 3.60 × ($\sqrt{}$3.20) = 1.7888 = 6.44 turns, not 11.52 turns.

"W. C." states that "X. Y. Z. A." does not give any reason why he uses the 20 per cent less twist factor in the twisted yarn, and I will state why I use 25 per cent less twist factor. I could give various reasons, but I am only going to state one, and that one is, *just to make it balance twist*, which I have found to be right.

I would like for "W. C." to explain for myself and the rest of the interested readers of COTTON, how he got the twist in both single and twisted yarn, and then we could see whether the answers could not be secured by some rule that would govern both, as different men have different ideas in figuring twists and other methods of getting it.

H. E. W. (Maryland).

NEW MACHINERY AND TRADE NOTES.

U. S. WORSTED CO. MAKES STATEMENT.

Following a meeting of the directors of the U. S. Worsted Company at the executive offices in Boston, April 11, President Andrew Adie made public a statement to the effect that, owing to the incorrect character of the inventory and financial statement of June 29, 1912, upon which was based the re-financing of the company, it has been found that additional working capital is needed, part of which has been supplied by the bankers as a temporary loan, while the committee on reorganization will propose a plan for providing a permanent addition to the working capital as soon as the accountants have completed an investigation that is now in progress President Adie also makes public the fact that the U. S. Worsted Company has an option on the Saxony Mills, Newton, Mass., and has been operating it for its own account since November 20, 1912.

That part of President Adie's statement that refers to the company's financial plans and to the company's probable business future is as follows:

"The net quick assets of the present company are much less than was contemplated by the plan of reorganization. In order to provide the company with necessary working capital and maintain its high credit, arrangements have been made by the bankers for supplying the sum of $1,000,000, of which $700,000 has already been temporarily loaned by them to the company, and the indebtedness represented by such loan has been made subordinate to the indebtedness represented by all other notes of the company, and to all indebtedness incurred for materials and supplies.

"As soon as the accountants have finally completed their investigation, and so far as possible have placed the responsibility for the deficiency in the assets of the United States Worsted Company (of Maine) and the Lawrence Dye Works, some plan will be proposed for providing permanently such additional working capital as may be needed in addition to the quick assets actually acquired from the United States Worsted Company and the Lawrence Dye Works.

"In view of the character of the manufacturing properties and the opportunities for business, as I now find them, I am of the opinion that, with a provision for adequate working capital, and with economies already effected in the management and operation of the old United States Worsted Company's affairs, the present company will eventually be in a position to earn reasonable dividends upon a proper capitalization."

THE TEXTILE EXHIBITORS' ASSOCIATION.

The board of directors of the Textile Exhibitors' Association, Inc., recently held a meeting, at which the invitation from the Southern Textile Association and the Greenville, (S. C.) Board of Trade, to hold an exhibition in that city this fall, was carefully considered. While the final action of the board was not in favor of holding the exhibition, yet the board was unanimous in appreciation of the most courteous invitation. The reason for this action was due to the short time which would be allowed for preparation, and also to the fact that action has already been

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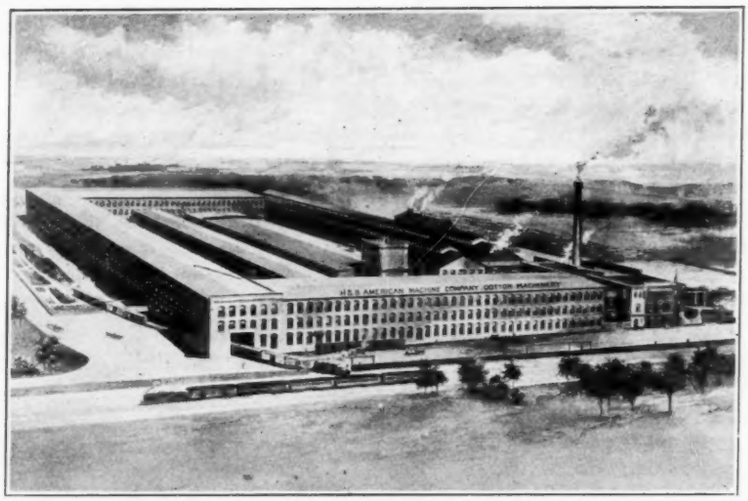


Spinning Room Machinery

Twisters for Wet or Dry Work

With Band or Tape Drive

H. & B. AMERICAN MACHINE COMPANY
PAWTUCKET, R. I.

taken to hold a large exhibition in Boston in April, 1914. It is the intention of the association to incorporate the cotton, woolen, hosiery and knit goods trade in the coming exhibition, and for this purpose the entire Mechanics Building will be used. Invitations to the various associations of manufacturers will be issued, suggesting holding their meetings during the exhibition. With this end in view a hall will be set aside and ample facilities will be accorded them for business meetings.

THE GEORGE P. CLARK CO., of Windsor Locks, Conn., are sending to the trade their Bulletin M, featuring a line of dry goods, dye house and laundry trucks. This is the fourth of a series of bulletins which they have issued and it contains more new illustrations than any of the previous ones. It describes trucks manufactured with the usual Clark thoroughness of detail and quality of material and workmanship. A copy will be sent to all interested upon request.

If the right kind of size is not used, sizing warps by the chain system proves very costly, especially so when, as is often the case, the threads stick together. Managers of mills for colored goods, both in the South and North, find that this difficulty can be met by using the Sizeoleum and the soluble softening oils, manufactured by THE ARABOL MFG. CO., 100 William St., New York. They may be used either with corn or potato starch. The Sizeoleum, making tallow superfluous, is also recommended as a reliable and superior compound on print cloth warps, sheetings and domestics.

MASTIC FLOORING FOR INDUSTRIAL PLANTS.

The modern industrial establishment, with its complex machinery, elaborate factory systems and skilled operatives, offers a noteworthy example of evolution from crude and inefficient methods. Not only have mechanical devices been developed to a high state of perfection in the past few decades in order to keep pace with competition, but changes of equal importance have been wrought in the construction of factory buildings, with the object of contributing to safety, comfort and efficiency.

Among those details which have received the attention of experts is the subject of flooring. The problem of flooring the factory is a difficult one, but the obstacles which present themselves in the average plant seem at last to have been overcome by a flooring material known as "J-M Mastic." This flooring is excellent for factory and warehouse use, even under the heaviest trucking conditions, and on account of its noiseless character is a boon in plants where there is considerable trucking. Another feature in its favor is its peculiar holding quality which prevents slipping. It provides a surface that is waterproof and at the same time practically wear-proof under ordinary service conditions. It is also unaffected by acids, alkali and brine.

Being waterproof, it is absolutely sanitary, as it can be quickly and thoroughly cleaned by the simple process of flushing, after which it dries out immediately. It will not originate dust, a point of vital importance in establishments where it is imperative to keep machinery and goods free from dust.

The base of this flooring is asphalt mastic, a product in which a finely graded mineral aggregate is bonded together

by an asphaltic cement or binder. The mineral aggregate in the material, as made up, will pass through a wire screen ranging from 80 to 200 mesh in fineness.

This flooring can be made in any consistency between extreme hardness and softness and, while always dense, possesses a certain amount of resiliency. As it does not cause foot-soreness and fatigue like concrete and other non-yielding floor surfaces, it adds greatly to the efficiency as well as to the comfort of employees in machine shops, factories and other industries, who are compelled to stand while at work. Furthermore, being damp-proof, it is an efficient protection against ailments common to damp conditions. It can be laid over any foundation which is firm and stable, and may be applied over wood, brick, concrete or tile already in place. In new construction concrete or heavy mill construction is the most desirable.

Flooring of this make is easily repaired if changes in the floor surface are made necessary at any time. It adds very little to the dead load, as the standard thickness of 1½ inches weighs only 18 pounds to the square foot in place. This thickness is sufficient for ordinary trucking requirements but can be varied to most conditions, ranging from 1-inch for lavatories where the requirements are very light, to 3 inches in thickness for loading docks, where the requirements are correspondingly severe.

This flooring is perfectly adapted for breweries, canning factories, candy factories, cold storage plants, dairies, dye houses, laboratories, machine shops, packing plants, railroad stations, school houses, institutions, etc. In fact, its scope is almost without limit. It is superior to wood, concrete, brick, tile, slate or composition floors, and may be substituted for floors of those materials to excellent advantage.

The H. W. JOHNS-MANVILLE Co., of New York, manufacturers of "J-M Mastic," will be glad to send a booklet to anyone interested in the subject of flooring. This concern maintains a thoroughly equipped engineering department which co-operates with engineers and architects in handling flooring and waterproofing work of every nature.

WHAT THE SOUTH IS DOING.

An analysis of the Northrop loom sales, which appeared in the January issue of *Cotton Chats*, brings out some interesting facts.

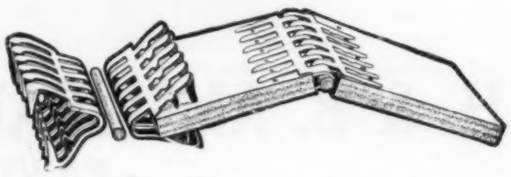
Dividing the country into two groups of mills, one including those in the New England, Middle and Western states, and the other including the Southern states, we find 108,687 Northrop looms in the former, and 131,832 Northrop looms in the latter; or a little *over twenty-one* per cent more Northrop looms in the *South* than in all the rest of the country put together.

South Carolina, with 71,488, remains the banner state; Massachusetts ranks second, with 40,771. The Draper Co. state that their shipments of Northrop looms were in 1909—22,389; in 1910—22,855; in 1911—21,015, and in 1912—20,814, while on January 1, 1913, there was on order 10,809, making a total of 97,882 Northrop looms shipped and on order in four years, January 1, 1909, to January 1, 1913.

Of the total shipments of Northrop looms in 1912, about two-thirds replaced old common looms. This replacement pertained to a much greater extent in Northern territory, where it was slightly over 78 per cent, than in Southern territory, where it was about 45 per cent.

A FLEXIBLE STEEL BELT LACING.

A durable belt fastening is something much to be desired by every superintendent and master mechanic having in their charge the motive power of a textile plant. Something that can be quickly applied and still be dependable. These never-tiring searchers for time-saving, power-saving, and therefore money-saving appliances, will be especially interested to learn about "Alligator" steel belt lacings. This lacing is adapted for use on leather, rubber, balata, cotton or canvas stitched belting. It is a separable lacing, hinging on a rawhide or sectional steel rocker pin. The flexible joint assures proper contact with the pulley, whether the belt is run with either or both sides in service. It is claimed that this lacing is specially applicable to use on rubber or textile belting, because it overcomes a tendency of the belt to fray at the end. The members of the steel lacing clamp the ends of the belt and so protect them. The teeth on each side of the lacing enter the belt on different angles of perforation, as will be seen from the illustration. Each prong has two teeth, the longer clinching through the belt, while the shorter point on the opposite side of the prong gives great additional strength. Both enter the



belt in such a manner that the pull is against the edge of the steel. No special tools being required makes the application of the lacing the work of a few seconds only.

This lacing being separable, it is especially adapted for use on overhead belts, inasmuch as the ends can be dropped down, the lacing applied, and the hinge pin inserted after the belt has been placed over the shafting. It can also be easily removed from the shaft by merely taking out the pin. The connecting bar between the prongs is indented on the under side to allow it to be broken into the required lengths. The sectional steel pin consists of two specially formed steel wires having oval faces with lugs on the back to fit in between the loops of the hinge and keep it from working out. In service, the sections of the pin remain stationary in the loops of the lacing and give the necessary flexibility to the joints by rocking on their oval faces. This lacing does not require the work of an expert mechanic to apply it, and as any ordinary workman can do equally as well. The only tool required is a hammer. Numerous tests on belting have been made to show the strength of "Alligator" joints, and the results of such tests together with other illustrated descriptive matter concerning this steel lacing may be secured by applying to the manufacturer, the FLEXIBLE STEEL LACING Co., 542 West Jackson Boulevard, Chicago, Ill.

WILLIAM B. SCAIFE & SONS Co., are issuing a new catalog describing the Scaife gasoline storage outfits. These are made up with welded gasoline tanks, long distance pumps, special fill pipe arrangement; and many other desirable features. They show a very simple and efficient arrangement for isolated storage outfits, also storage tanks for the storage of compressed air. This interesting catalog will be forwarded upon application.

Barrett Specification Roofs

After the Fire

STRIKING proof of the fire retardant qualities of a Barrett Specification type of roof appears almost every time there is a city or factory fire. The photograph herewith shows a typical instance.

The Prichard Building, Newark, N. J., was completely gutted by fire. The building is isolated so that the firemen could not get to work on the roof, and in consequence the roofing received practically no protection by water.

The roof, although it had acted as a blanket over the flames, showed only trifling damage at two or three small points where the support was completely destroyed. If it were not for the necessity of replacing the roof boards beneath, which were badly burned from inside, the roof could have been put in first-class condition at very little cost.

There are thousands of instances like this where Barrett Specification Roofs have withstood severe exposure to fire, and thousands of buildings are saved every year from exterior fire exposure by these fire retardant roofs.

The Barrett Specification will be sent free on request. Every architect and engineer and property owner should have a copy on file.

Barrett Manufacturing Company

New York Chicago Philadelphia Boston St. Louis Seattle
Kansas City Cleveland Cincinnati
Minneapolis Pittsburgh Corey, Ala.
THE PATERSON MFG. CO., Ltd.,
Montreal Toronto Winnipeg Vancouver
St. John, N. B. Halifax, N. S. Sydney, N. S.

TRADE B MARK

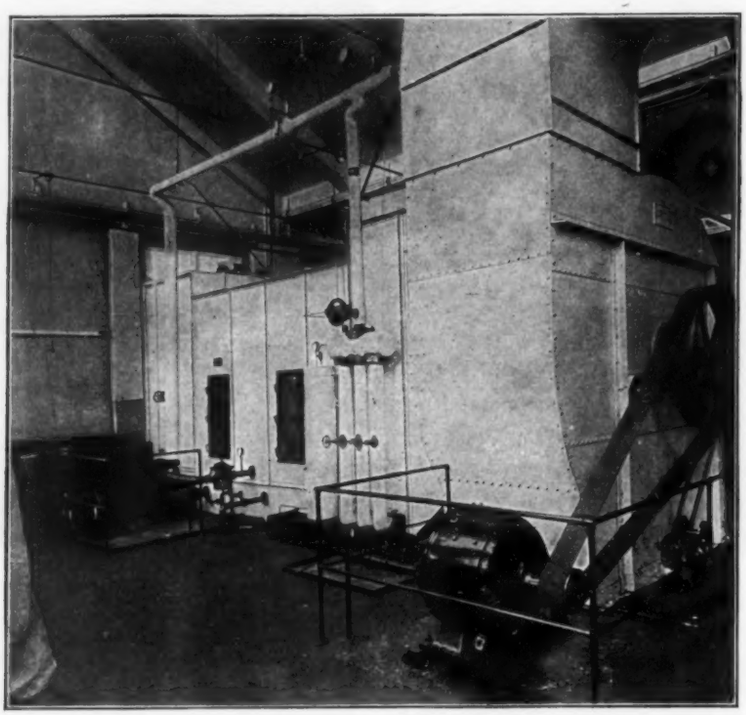
HIGH TEMPERATURE EFFECT UPON COTTON CARDING.

That humidity greatly affects cotton carding is well understood by every mill manager. Too low humidity means static electricity and other troubles, while excessive humidity means rolling up, sticking and probably rusting of the clothing. Nearly every mill manager will admit that he has much trouble in operating his carding room in summer on very hot days due to the high humidity. Overseers of cotton carding departments frequently complain that the humidity on certain hot days was so high that their production fell off and they had any amount of trouble in operating at all. It has been proven that the real reason for these troubles is not always due to high humidities, but rather to high temperatures.

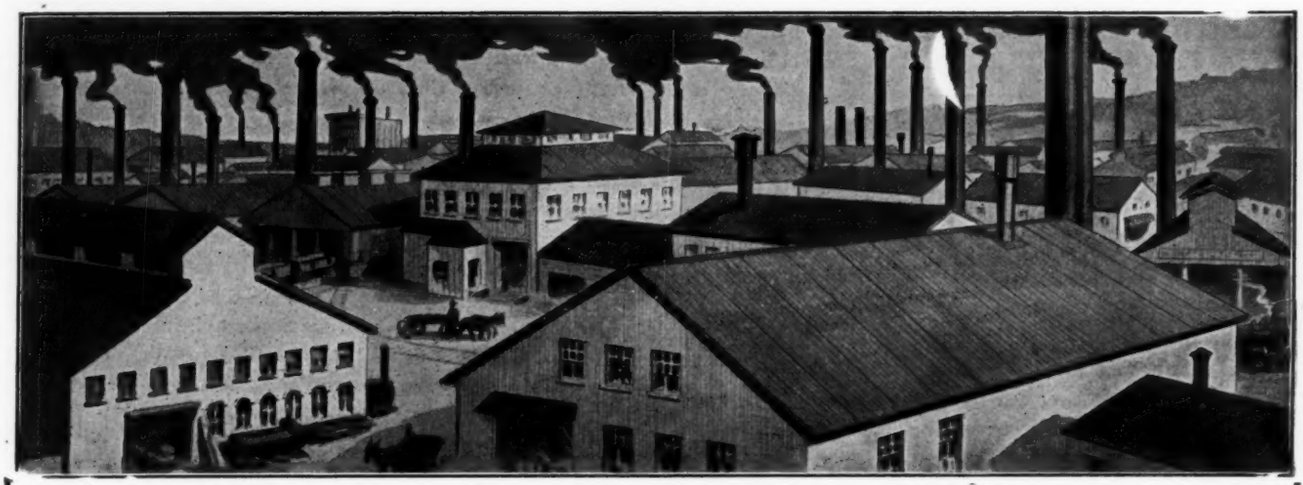
Most mills desire to run the card rooms at from 50 to 55 per cent humidity. Where automatic humidity control is provided, humidities as high as 60 per cent may be employed to an advantage. Of course, 60 per cent is practically out of the question where automatic humidity control is not used, for without some automatic arrangement the humidity at times would greatly exceed 60 per cent and would immediately cause trouble. It will be found that the average humidities in cotton carding rooms on these very hot days is not excessive and in fact not as high as those maintained at other times in mills equipped with automatic humidification. In those mills which are equipped with a system for ventilating, cooling and humidifying, and which supply air to the card room in sufficient quantities to hold down the temperature so the card room may be held lower than the temperature of the outside air, card room troubles from atmospheric conditions are entirely eliminated.

Last summer for a whole week during the very hot spell in the middle of July, considerable trouble was experienced in carding throughout the Mohawk Valley, and very few carding rooms were able to run at all. A mill equipped with the Carrier System of Air Conditioning located near Utica, however, continued to run throughout this hot spell and procured full production from their carding room during this time. The humidity maintained in this room was approximately 60 per cent, but the temperature was maintained lower than it would have been possible to maintain without this system. The temperatures in the carding rooms were lower than the outside whenever the outside temperature was much above 80 degrees. The fact that several mills in this same locality, and a mill operated by the same company in a nearby town could not operate their card rooms during this hot spell, is conclusive proof that the troubles were not due to high humidities, but rather to high temperatures. This mill was carrying higher humidities than was possible to obtain in any of the other mills, but the temperatures were also many degrees lower than the other mills could procure with the systems of air conditioning which had been applied to them.

With the Carrier system of air conditioning, it is possible to maintain weave rooms on the hottest days as much as 10 to 15 degrees lower than the outside temperature; and spinning rooms which under ordinary conditions would be from 15 to 25 degrees higher than the outside air, can be maintained at temperatures at or below that outside. The accompanying cut shows the Carrier apparatus as usually installed in a mill, the one system doing the heating, ventilating, cooling and humidifying and it is also supplied with automatic humidity control for maintaining constant temperatures and constant humidities throughout the year.



This company guarantees to maintain the humidities during all seasons of the year, without regard to the outside weather condition, and we understand they back up this guarantee to the limit. They have been successful in installing their apparatus in some of the larger New England mills, and have only recently procured a very large contract for equipping the new 60,000-spindle mill and 1,000-loom weave shed of the Riverside & Dan River Mills, at Danville, Va.



THERE ARE OVER 300 IMITATIONS OF

RU-BER-OID ROOFING

Some of these imitations look like RU-BER-OID but that is merely on the surface. The roofing buyer cannot see what is underneath, or he would not be fooled in buying goods on their appearance only.

As a house built on a poor foundation cannot last, neither can a roofing founded on poor material give the service expected of it.

Take None but the Genuine

RU-BER-OID

Accent on the "RU" and always spelled with one "B"

Unless the RU-BER-OID Man is shown on the outside wrapper, the roofing is not the genuine RU-BER-OID

KA-LOR-OID (Colored Ruberoid) ROOFING

RED---BROWN---GREEN

The permanently colored prepared roofing

The ideal roofing for Bungalows, Cottages—in fact suitable for any building where artistic effect is desired.

The Standard Paint Company,

100 William Street, NEW YORK

BOSTON, CHICAGO, DENVER.

CLINCHFIELD ENLARGES THE SCOPE OF ITS SCIENTIFIC DEPARTMENT.

Another striking example of the progressive methods of the Clinchfield Fuel Company is the announcement of the establishment of the Clinchfield Laboratories for the complete investigation of the physical and chemical properties of coals. The practical value of this new department to the consumer of steam coal lies in the fact that every coal field presents seams of varying physical and chemical properties, and in the additional fact that the various types of boiler-plant construction demand fuels of different qualities. Thus the scientific data supplied by the laboratories will enable the Clinchfield Company to select for each plant the particular quality of coal which its special type of construction demands.

This scientific department was established in 1910, and under the direction of expert fuel engineers has rendered the patrons of the company a service which many manufacturers now consider absolutely indispensable. In the past this department has addressed itself chiefly to the problems of boiler-plant construction with a view to increasing efficiency and eliminating waste in fuel.

Among the many interesting instruments of precision in the new laboratories is a Platinum-lined Emerson calorimeter, the most exact and expensive apparatus of its kind. To insure accuracy, this instrument, with its thermometers and other accessories, is being tested by the U. S. Bureau of Standards at Washington, to have its corrections determined. With these corrections known, it will be possible for the chemist to ascertain the calorific value of specimens with exactness.

The fusibility of the ash, an item of prime importance, will be ascertained by means of an electric furnace. Apparatus for the proximate and ultimate analysis of coals will give reliable information as to the proportions of volatile matter, fixed carbon, ash, sulphur and moisture. The scleroscope will give valuable data relative to the physical properties of the samples examined.

The Clinchfield Laboratories are under the direction of J. G. Dailey, whose wide experience in practical chemistry in this country and abroad insures the greatest possible usefulness for the new department. This institution represents another important advance in the application of science to the solution of the practical problem of the boiler room and its beneficial effects will be measured, in the years to come, by a saving of hundreds of thousands of dollars to those manufacturers who, by intelligent co-operation, take advantage of its splendid service.

Some of our subscribers will build new homes this spring. Some will put on new roofs, and of course every one wants the best, provided they can get it at the right price. Perhaps you have noticed the advertising of Cortwright Metal Shingles in our columns. This roofing has been on the market over a quarter of a century, and roofs first put on are, it is claimed, as good as new today, and have never needed repairs. In fact, in the last issue of the *Cortwright Metal Shingle Advocate*, a paper which the Cortwright Metal Roofing Co. issue, they quote letters from several users who have used it for that length of time. Send for a copy of this issue. They will send it to you free of charge. Write to CORTWRIGHT METAL ROOFING CO., 50 North 23rd Street, Philadelphia, Pa.

In a paper on "Modern Methods of Lighting," read before the American Society of Mechanical Engineers at the Boston Engineers' Club on March 25, Albert L. Pearson stated decisively that "white walls and ceilings are advantageous and add to the effectiveness of a lighting system." Large production and a good quality of work necessarily depends to a great extent on the methods used in lighting the mills where this work is done. The great advantage of using a good reflecting surface for the light, whether natural or artificial, is something that should be thoroughly understood and particularly is this applicable in the textile industry. A recent example of this is seen in the new mill of the Brainard & Armstrong Co., at New London, Conn. In finishing the weave room in this new mill, which is devoted entirely to the making of white silks, all the interior of the mill has been painted in white throughout, walls and ceiling supports, etc., so that nothing but a pure white vista is presented. This scheme of white is carried further by painting the looms and all auxiliary machinery necessary to prepare the silk for the looms. The paint used to thus prepare this plant for producing the most perfect work was Rice's Mill White, manufactured by the UNITED STATES GUTTA PERCHA PAINT CO., of Providence, R. I. As each loom is driven by a direct connected electric motor, also painted white, the most minute effects of dust or dirt at once becomes visible to the operator and the whole plant is easily kept in a thoroughly clean condition, thus eliminating all spotted and damaged goods. This is a subject worthy of the immediate attention of all textile manufacturers.

The officers of the AMERICAN PULLEY COMPANY were hosts at a banquet held at the Germantown Cricket Club of Philadelphia on April 1st. C. A. Brinley, president of the company, presided in a very delightful manner and gave out some extremely cheering intelligence regarding the Employee's Beneficial Fund, which is now being set aside for the sole benefit of the employees.

Plans were discussed looking to the greater development of the company, which is one of the best conducted in America. It was a striking note of the occasion that, in all the matters discussed, the welfare of the men who have helped make the company was considered. Horace Sheble, an expert on efficiency, gave an interesting talk on methods to be pursued.

The committee in charge of the entertainment consisted of William R. Sampson and J. W. Muir. The guests were as follows: Charles A. Brinley, H. N. Dunseith, Charles E. Brinley, H. L. Hindle, Wm. R. Sampson, H. M. Barnhart, Giles L. Reynolds, I. D. Tomlinson, Morris W. Rudderow, A. C. Walker, Russel H. Bowen, J. F. Sharpless, Jr., J. H. McKinley, Richard A. Foley, E. W. Hough, Horace Sheble, John Forrest, E. R. Termain, John Halpin, Jacob Hill, C. G. Reynolds, H. Merritt, P. E. Judd, W. P. Arnaiz, C. G. Neumann and J. W. Muir.

THE PHILADELPHIA TEXTILE MACHINERY CO. will have an interesting exhibit at the convention of the National Association of Hosiery & Underwear Manufacturers at Philadelphia. The most modern and up-to-the-minute drying machinery will be shown in operation. These dryers will contain a great many improvements which will cut down the cost of operation and upkeep of the drying machinery.

SOLUBLE SIZING TALLOW

This preparation is simply raw beef tallow made soluble. In view of the fact that raw tallow will not dissolve and hence does not combine with starches, we herein offer an article that avoids these objectionable features. Soluble Sizing Tallow dissolves and combines readily with all starches and acts as a most valuable softening agent. Users of this article will avoid the danger of mildewed warps and also the disagreeable odor of Raw Tallow in the goods. An unexcelled softening agent.

In slashing the best results are obtained when it is used together with one of our Gums, such as Gum G, Scotch Gum, Yorkshire Gum or Arabol X.

In Short Chain Sizing it should be used alone.

ARABOL MFG. CO.

100 William Street **NEW YORK**

Southern Sales Agent

CAMERON MacRAE ***CHARLOTTE, N. C.***

BOOK REVIEWS

All Books Reviewed Under This Heading May Be Procured From COTTON at the Published Price.

POATES COMPLETE ATLAS OF THE WORLD. 193 pages of maps. An alphabetical index of states and countries. Also a list of the important cities and towns with their population according to the United States Census of 1910. Published by L. L. Poates Publishing Co. Price in cloth $1.50; semi-flexible leather, $2.00.

This atlas, which is 7 by 10 inches, is a very conveneint size for the office, each map occupying practically two pages. It contains maps of the United States, its 48 states and territories. Also its insular possessions, together with the Canadian provinces and other divisions of the Dominion, as well as every other country in the world. The maps are printed in five and six colors. Late geographical changes are noted, such as new counties in Texas, Montana, Wyoming, South Carolina, etc.

This company has also prepared a 29-inch parcel post zone map of the United States, with regulations and special finder for any zone, which they are distributing at the nominal price of 25 cents each.

COTTON MILL MACHINERY CALCULATIONS. By B. Moore Parker, B. S., Assistant Professor Carding and Spinning Textile Department, North Carolina College of A. & M. Arts. 167 pages, 45 illustrations. Published by B. M. Parker, West Raleigh, N. C. Price, $1.50.

This book is largely a reprint of a series of articles that were written exclusively for COTTON during the years 1911 and 1912. This material has been entirely revised and enlarged and the author has added numerous tables, covering practically all the calculations simple, and otherwise, that anyone would need in handling a mill. This book will be especially well received by the numerous readers of COTTON who began receiving the paper after a part of this series had appeared and who were unable to secure back numbers sufficient to make their files complete. Anyone desiring to secure a complete list of the calculations for a cotton mill from the openers to the weave room, should become a possessor of this valuable book.

PANAMA CANAL; WHAT IT IS AND WHAT IT MEANS. By Hon. John Barrett, Director General of the Pan American Union. 120 pages. Profusely illustrated. Also containing several maps. Published by the Pan American Union, Washington, D. C. Price $1.00.

This little handbook has been prepared to meet a special demand. The wide spread and growing popular interest in the Panama Canal and the great number of persons visiting the Isthmus have caused a heavy call to be made upon the Pan American Union for the very information which is contained in this book. In preparing this work the author endeavors to answer in compact form the majority of questions which are asked, not only by those who, unable to go to Panama, desire to know more about the canal and what it means, but also by those who in going there, wish to learn in advance what they will see and confirm afterwards what they have seen.

This interesting book, descriptive of the greatest engineering feat in the history of the world, has been endowed by Mr. Barrett with that touch of personality which makes the reader finish the work at one sitting and finally lay it aside with the desire for a second volume uppermost in his mind. We predict that it will be the biggest little book of the year, and it is one which should have a place on the reading table of every home in America.

THE TEXTILE FIBERS; THEIR PHYSICAL, MICROSCOPICAL AND CHEMICAL PROPERTIES. By J. Merritt Matthews, Ph.D., Consulting Chemist to the Textile Industries. 630 pages. 141 figures. Price, bound in cloth, $4.00 net. Published by John Wiley & Sons, New York and London.

Dr. Matthews needs no introduction to the readers of COTTON. So many valuable articles have appeared in the dyeing, bleaching and finishing department during the past several years contributed by Dr. Matthews, that his name has become familiar to every reader of technical literature on textiles. This present book has been re-written and is being issued in its third edition. It was the outgrowth of a number of years of experience in both the teaching of textile chemistry and in the practical observation required in the many mill problems that came under the notice of the author in the practice of his profession. He has endeavored to emphasize throughout this volume the importance of study of the fiber as an individual, for in many cases it is misleading to assume that the behavior of the individual fiber is identical with a large mass of fibers in the form of yarn or cloth. Going back to the study of the individual fibers as a basis, many explanations can be given which could not otherwise be discovered. It is a book that will appeal not only to the student, but to the practical man in his daily work at the mill or in the finishing plant.

FINE COTTON SPINNING. By J. W. Lomax, 122 pages. Published by Emmott & Co., Ltd., Manchester, England. Price, 3s. 8d. net.

This is the fourth of a series of practical books on the textile industry brought out by this firm under the title of the "Textile Manufacturer Manual." The material constituting this volume has largely appeared in a series of articles in the Textile Manufacturer and has been revised and rearranged in a convenient form for publication. An interesting chapter is that dealing with the actual purchasing of cotton, and the means adopted by the spinner to cover yarn sales by purchasing future cotton. The book contains a diagram or chart, showing the variation in price in Great Britain, during the years 1905-06 to 1909-10. This book constitutes an interesting and practical manual.

COTTON WASTE; ITS PRODUCTION, MANIPULATION AND USES. By Thomas Thornley. 278 pages. 61 illustrations. Published by the D. Van Nostrand Co., New York City. Price, $3.00 net.

This treatise on cotton waste was designed to be of especial service to those who are directly or indirectly concerned in the production, uses and treatment of cotton waste in any of its forms. A section is devoted to the description of the weaving and other general uses of yarns spun from cotton waste. It deals specifically with the description of the machinery and processes involved, in the cleaning, opening, carding and spinning of cotton waste, and the treatment of the subject is full and comprehensive. In these days of keen competition and strict attention to detail, no one can afford to neglect the question of waste, whether it be in the direction of reducing its amount, or

The Textile Industry of the United States leads the world in the production of low priced colored cotton fabrics of great merit and intrinsic value for the masses. . . . . .

ONE of the chief contributing causes for the large increase in the production of colored cotton goods in the United States is the introduction of the "Fast Colors."

It was only a few years ago that consumers were afraid to buy colored cotton goods especially in the shades, such as Blue, Helio, etc., because the colors would not stand up under laundering and exposure to light.

Those who purchased colored cotton goods bought chiefly the dark shades in the hope that the fading would be gradual.

One of the advantages of colored cotton fabrics, besides being light and cool, is the feeling of cleanliness that comes from the fact that they can be laundered many times and without injury to appearance.

Many bought "White" when they would have preferred colored goods, because they knew from sad experience that the colored effects were unsightly after a few launderings.

When Indanthrene dyed cotton goods began to appear on the market a few years ago the trade was naturally reluctant to believe that a really fast color for cotton had at last been found, but the consumers gradually saw the difference and began to realize that colored cotton goods were really worth while, since they could be produced in colors which would practically outwear the fabric.

Gradually this feeling of confidence grew in the minds of consumers generally with the result that a large impetus was given to the colored cotton goods trade.

The end is not yet, but already

America leads in the use of Fast Colors; another reason why American goods merit the preference.

BADISCHE COMPANY

applying what must be made to useful and profitable purposes. It is a work that will be read with interest by many cotton mill men.

AMERICAN TEXTILE DIRECTORY AND YARN TRADE INDEX FOR 1913. (*The Green Book*). 624 pages. Published by the Lord & Nagle Co., 144 Congress street, Boston, Mass. Price, office edition, $3.00. Travelers' edition, $2.00. Vest-Pocket edition, per section, $1.00.

This well-known directory, which usually makes its appearance sometime in July, has been published this year nearly four months in advance of its usual time. It contains a full list of the textile establishments of the United States and Canada, arranged by states and towns where they are located with full data about each mill. This new edition contains 266 new mills and shows 184 mills out of business since the last edition and 3,600 mills making changes in their reports. The yarn trade index is a very complete one, as are also the indexes of yarn dealers, commission merchants and agents; bleaching, dyeing, and printing establishments; dealers in raw material; manufacturers' selling agents; dry goods commission houses, etc. There is also a classified list of mills according to the goods made, which is a very convenient index to have at hand on certain occasions. The textile associations of the United States and Canada are given, with the names of the officers and their addresses. As a whole, it is a valuable work of reference which finds a useful place on the desk of every manufacturer.

One of the most interesting and beautifully gotten up publicity booklets seen in a long time is that issued under the auspices of the Manchester Chamber of Commerce, of Manchester, New Hampshire, entitled, "City of Manchester, New Hampshire, and the Amoskeag Manufacturing Co." This booklet, which is handsomely bound, and has a colored lithographed cover, is full of illustrations describing the manufacturing, commercial and educational advantages of Manchester, and is intended to convey to persons unacquainted with the location, climate and water supply, some idea of the general desirability of Manchester as a place of residence as well as of business. This book is also intended to show the magnitude of Manchester's most important industry, the Amoskeag Mfg. Co., the largest textile manufacturing establishment in the world. The annual payroll of this company is nearly $8,000,000. It employs 15,500 operatives and controls 620,000 cotton spindles as well as 50,000 worsted spindles. The enormous output of these mills will perhaps be better understood when it is stated that its output of woven cloth per hour is 50 miles. This would be 471 miles of cloth per day, or 147,119 miles of cloth woven per annum. The power plant to drive these enormous mills contains 31 water wheels, 203 boilers, 12 steam engines, and 4 steam turbines. 37,000 horsepower is transmitted by electricity, being developed on 80 electric generators, and transmitted to 370 motors. The buildings of this concern contain 137 acres of floor space while the total amount paid in wages from their construction in 1831 to 1912 amounted to $121,123,429.

The AMERICAN MOISTENING CO., of Boston, Mass., has recently issued a new catalog describing humidifying, ventilating and heating appliances. It is well gotten up and contains 23 pages of descriptive matter. A copy may be secured by those interested on application.

The Board of Trade of Brunswick, Ga., have prepared a splendidly illustrated 27-page booklet descriptive of the unsurpassed advantages of Brunswick, not only from the standpoint of a seaport and industrial city, but also as an ideal residential city. Brunswick is very fortunate in having for a secretary a public-spirited and ever active live wire in the person of J. G. Weatherly. Mr. Weatherly will be glad to furnish further information concerning Brunswick to persons desiring to locate in a Southern seaport city.

H. M. Daniel, who has had a long and successful experience in selling yarn direct from the manufacturer to the knitter, having been for the last 17 years manager of the selling end of the well-known Mayo and Avalon mills of Mayodan, N. C., and having a wide acquaintance with knitters and weavers in the North, East, Middle West and Southern states, has established a company called H. M. DANIEL & COMPANY, of which he is the manager, to sell yarn for mills direct to mills, upon a brokerage basis. Mr. Daniel states that he will not sell any conflicting yarns or any yarn upon which his firm is not protected by the spinner. He states further that this will be to the advantage of both seller and buyer. A sure lowering of the excessive cost of distribution.

The FARBENFABRIKEN OF ELBERFELD CO., 117 Hudson street, New York City, are sending to the trade the following color cards: Algole Yellow 3 G. L. paste; Katigen Yellow Brown G. G. L. extra; and Chrome Red Brown 5 R. D. powder. These color cards also contain instructions for preparing and using these dyestuffs, and they will be sent to interested dyers upon application.

J. S. Palmer, Southern representative for "Rice's Mill White," with headquarters at Greenville, S. C., made himself extremely popular with the members and guests at the cotton manufacturers' convention in Washington, by presenting a convention souvenir to each as he registered. This souvenir was a triple silver plated safety razor of a well-known brand. The U. S. Gutta Percha Paint Co. was further represented at the convention by Herbert W. Rice, president, and Alexander S. West, general sales agent.

An interesting souvenir of the convention, and one much sought after was that of the J. B. Ford Company, of Wyandotte, Mich., who presented paper knives in antique copper suitably embossed with the "Indian sign."

The New Bedford Textile School of New Bedford, Mass., has recently issued its new catalog for 1913-1914. This school is housed in two separate buildings, connected by a tunnel in the basement and by covered bridges overhead. They are handsomely constructed of red brick with trimmings of Indiana sand stone. They are classified as the machinery building and the recitation building. The main building, besides being equipped with recitation and lecture rooms of various sizes, has a thoroughly equipped chemical laboratory, a large dye and finishing room, an engineering laboratory, a commodious machine shop, a drafting room, a designing room especially fitted, an exhibition room, and an assembly hall that will seat 400 persons. Both structures are of slow-burning mill construction, and great attention has been paid in the planning and arranging of both build-

Scientific
Mining
Methods

Unequaled
Transportation
Facilities

CLINCHFIELD SERVICE

"Never Short of Cars"

Watchful
Attention to
Deliveries

Expert
Boiler-room
Advice

Mammoth Storage Plant, centrally located

ings for the school to make them most suitable for the purpose of imparting textile instruction and that the machinery building should give an object lesson in cotton mill engineering. The work that has been accomplished by this school in the past has been thoroughly recognized by all having knowledge of the textile industry, and the future contains a bright outlook for even more promising results.

ANNUAL MEETING OF BELTING SALESMEN.

In accordance with its policy, adopted a number of years ago, the GRATON & KNIGHT MANUFACTURING CO., of Worcester, Mass., well-known oak leather tanner and belt maker, recently held a salesmen's convention at its main factory in Worcester. This convention was attended by the company's salesmen from all parts of the country, and the various sessions were devoted to an inspection of the factory, to a study of methods of manufacture, as well as to the sale and application of the company's products. At the conclusion of the convention a banquet was served, at which more than 100 officers, salesmen and other employes were present. A feature of this year's meeting, which was especially inspiring to those in attendance, was the presence of Henry C. Graton, founder of the business. To a very large extent the phenomenal growth of the business from a small belt shop in 1851 to a plant that is one of the largest of its kind in the world is to be attributed to the sagacity and wisdom of Mr. Graton and his early associates, and to the persistent adherence of the firm to the policy adopted of endeavoring to meet the steadily increasing demands for the most serviceable leather belting.

A NEW SOFTENER.

A softener of merit has long been looked for by manufacturers of cotton and woolen textile goods and also by finishers for starching and finishing lace curtains, hosiery and other knit goods. It is therefore with pleasure that we call attention to the new softener now being put on the market by the STANDARD SOAP COMPANY, of Camden, N. J. This softener is known as "Pux Softener," and has been developed only after years of study and experiment, in which they have made many tests and actual trials before producing this softener, which has been acknowledged by many expert manufacturers to give entire satisfaction and perfect results. It is claimed that it leaves a fine, heavy finish, with a beautiful silk luster and a soft, mellow feel. It does not stick or paste on the rollers and, if anything, tends to keep the rollers clean. It is perfectly neutral and will therefore mix and form a perfect union with other ingredients and with no formation or refuse on top.

For use as a softener, take 12 pounds of "Pux Softener" to 60 gallons of water, and boil together.

For a softener for finishing all starched goods, laces, etc., to make 60 gallons, dissolve the starch in cold water and add the other materials as desired, then add 12 pounds of "Pux Softener" and boil the whole. Use more or less softener according to the softness and luster desired.

This company also manufactures a large line of textile soaps. They will be glad to furnish further information on request.

The Silk Association of America have recently removed their offices to new and more commodious quarters located at 354 Fourth Ave., New York City.

Textile Graduates From Evening Classes.

The graudation exercises of the evening classes of the Bradford Durfee Textile school were held on Wednesday evening, April 9, in the assembly hall of the school. They were very well attended. In fact, the attendance was larger than the hall would accommodate. There were 326 graduates to receive certificates, and probably 300 of them were present.

Leontine Lincoln, president of the school, presided. With him on the platform were Frederick Wallace Abbott, Ph.D., M. D., LL.D., of Taunton, speaker of the evening; Vice-President William Evans, Clerk William Hopewell, Treasurer Edward S. Adams, William H. Dooley, recently appointed principal of the Technical High School, and Principal Fenwick Umpleby, of the Textile School.

Among the graduates were ten young ladies, five in the jacquard weaving class and five in general chemistry.

Frank R. Holly has accepted the general agency for the Liberty Manufacturing Association, 30 West Lake Street, Chicago, and is promoting Liberty dry chemical fire extinguishers for Georgia, Alabama, Mississippi, South Carolina, East Tennessee and Florida. Mr. Holly will make his headquarters in Atlanta at 1101 Third National Bank Building.

We are steel makers for the universe, wheat raisers for the five races, machinery builders, locomotive constructors and bridge erectors for every kind on earth. Now let us see what can be done with cotton textiles.

MILL NEWS

Notices of mill projects, additions or improvements are solicited for this degartment

ALABAMA.

ALEXANDER CITY. The Russell Mfg. Co. is completing its addition which will be 145 x 113 feet. This will allow them to add an additional 5,000 spindles with the accompanying machinery and almost double the plant.

HUNTSVILLE. The Abingdon Mills is installing a new boiler. Considerable new machinery has been added during the past six months and with this new equipment a fine showing is expected during the coming year.

SELMA. The Selma Cotton Mills have been sold to Godwin, Reed & Co., of Cincinnati.

CALIFORNIA.

LONG BEACH. Benjamin S. McLouch, president of the Western Industrial Development Co., of Los Angeles, has made a public announcement to the effect that tentative plans for the purchase of a 30 acre tract midway between Los Angeles and Long Beach have been made. On this tract will be built one of the largest mills on the Pacific Coast and one of the largest in the West. The company is reported to be capitalized at $750,000 and expect to invest $500,000 in the site and factory buildings. It is the intention now to utilize the long staple cotton grown in the Imperial Valley as the material on which to operate.

CONNECTICUT.

PINE MEADOW. G. B. Smith & Sons are to erect an addition to the weave shed 30 x 40 feet, one story high of concrete construction.

GEORGIA.

ATCO. The American Textile Co. have recently let a contract for ten additional operatives' houses at this place.

COLUMBUS. The Eagle & Phenix Mills have definitely decided to install both steam and electrical machinery in the mills in order to keep from having to curtail at times of high water, which deprives them of some of their water power.

EGAN. The Piedmont Cotton Mills of this place have added ten new wide looms to their equipment. These looms are from 84 to 96 inches wide.

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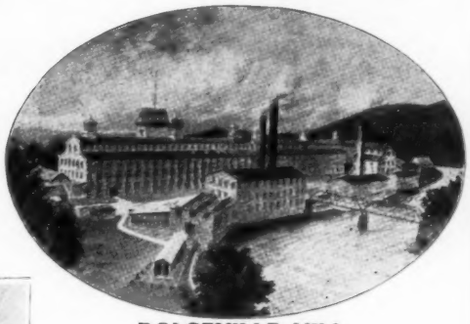

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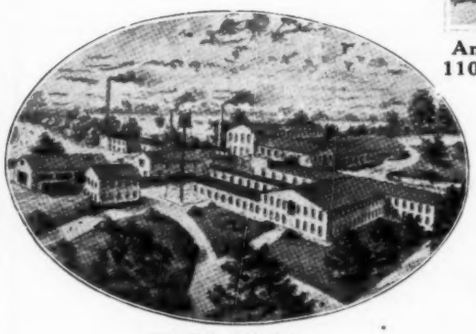

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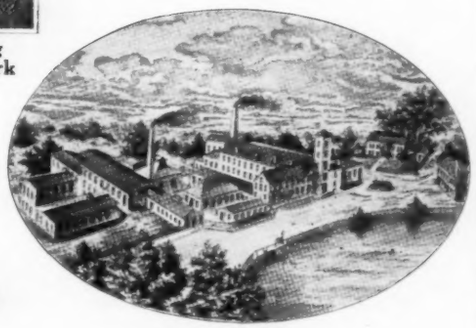

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COTTON CORDAGE TWINES COTTON YARNS

COMMISSION ACCOUNTS SOLICITED

GRANTVILLE. The Grantville Spinning Mill has been compelled to provide more room for storage of cotton and has recently completed a storage warehouse with a capacity of 500 bales of cotton.

LAFAYETTE. The stockholders of the Union Cotton Mills recently held a meeting at which time the following directors were named for the ensuing year: P. D. Fortune, G. W. Davenport, H. S. Probasco, G. C. Patten, J. E. Patten, William McWilliams, W. P. Jackson, J. P. Shattuck, and W. A. Enloe, Jr. The officers elected were: F. D. Fortune, president; G. W. Davenport, vice-president; W. A. Enloe, Jr., treasurer; and J. P. Shattuck, secretary. The past year has been a very successful one for the mill and a number of improvements have been made. There are however, other improvements anticipated during the present year.

LAGRANGE. The Dixie Cotton Mills have closed a contract with the Columbus Power Co. for electric power to operate their mill. They are to erect 20 additional cottages at their village for operatives. The contract has already been awarded to the Gallivan Construction Co. The new building that was recently reported as being added to this mill is in the course of construction and as soon as completed will be equipped with modern machinery.

MACON. The Bibb Mfg. Co., at this city is arranging for an electric drive in its plant and are to install 44 motors for this purpose.

MONROE. The Monroe Cotton Co. has resumed operation after a shut down of several weeks caused by installing new machinery.

SOCIAL CIRCLE. At a recent sale conducted by B. S. Walker as trustee in bankruptcy under orders from the referee, the Social Circle Cotton Mill was sold to G. M. Duval for $27,000 in addition to certain bonds and taxes amounting to over $90,000 which is assumed by the purchaser.

MASSACHUSETTS.

FALL RIVER. The Standard Fabric Co. are planning to increase their equipment and have already placed an order for 500 additional braiding machines. This company manufactures laces, ribbons and tapes.

MISSISSIPPI.

WEST POINT. The Lorain Cotton Mills is the name of the newly organized mill behind which are J. R. French and C. E. Wilkins, of Starkville, Miss. These gentlemen have purchased the West Point Cotton Mills, and are to reorganize under the above name. The company is to be capitalized at $125,000.

NORTH CAROLINA.

BURLINGTON. The White Head Hosiery Mill has begun the construction of a large modern hosiery mill building 50 x 160 feet and equipped with modern machinery. On the third floor are to be located 500 machines. The building now being located by this company will be leased or sold.

CHARLOTTE. It is reported that plans are practically complete for the reorganization of the Thayer Mfg. Co. under the name of the Thrift Mfg. Co., with a capital stock of $600,000. E. A. Smith, president of the E. A. Smith Mfg. Co., of Rhodes, N. C., is to be the president, and associated with him will be George B. Hiss and Robert Lassiter, of Charlotte. C. B. Skipper is to be the superintendent. Automatic looms will be installed and the equipment changed to produce from 40's to 50's yarns which will be woven into fancies. It is expected to be in operation at an early date.

CONCORD. The Cannon Mfg. Co. has recently purchased a 40 H. P. motor truck, which was put into operation between the mill and the cotton platform. It has a capacity of 12 bales of cotton per trip.

GASTONIA. It is reported that the Ozark Mills are to double their capacity.

GASTONIA. The Johns Mfg. Co. has completed its addition and will install a thousand spindles, four cards and other accompanying machinery.

GREENSBORO. One of the recent improvements in connection with the large denim mills of the Cones' at this place is a branch for indigo dyeing and printing. This is an individual enterprise on the part of Mr. Caeser Cone and is designed to finish the cloth products of their mills at this place.

GREENSBORO. The Pomona Mills are adding 5,000 spindles to their present equipment as well as some other machinery.

KING'S MOUNTAIN. The Phoenix Mills at East King's Mountain is to add a weaving department to their mill at an early date.

LEXINGTON. The work of building the railroad extension and siding to the site of the Erlinger Cotton Mills is being pushed and as soon as it is finished the contractor will have several train loads of material on the ground and immediately start work on the construction.

MARION—18,00 of the new spindles and 450 of the new looms for the Marion Mfg. Co., have been received and are being erected.

MORGANTON. It is reported that David H. Ball is to build a knitting mill here installing fifty 200 needle machines.

ROANOKE RAPIDS. The Roanoke Mills are putting in 256 Draper looms and four napping machines. A new addition is being built for the napper room.

ROCKINGHAM. The Great Falls Mfg. Co. has recently painted the interior of all its operatives' cottages and completed the work of screening every window and door. This is only another evidence of the care and attention Southern cotton amnufacturers give to the health conditions of their operatives.

SALISBURY. The Littman Mills which were recently incorporated with a capital stock of $50,000 is to equip with the necessary machinery for the manufacture of cotton novelties. Steam power is to be used.

RHODE ISLAND.

CENTRAL FALLS. The Pawtucket Hosiery Co., which recently purchased land in Central Falls, is to erect a plant on that site. It is to be of brick, one story high and basement, 100 feet by 103 feet. The power house will also be built in connection with the main mill.

SOUTH CAROLINA.

PIEDMONT. The Piedmont Mills are repainting the interior of all their operatives' houses.

ROCK HILL. The Hamilton Carhart Co. is building an addition to their mill to take care of the overall department which has grown to such proportions that the space allotted to it in the main mill is no longer sufficient.

TENNESSEE.

CHICKAMAUGA. The Crystal Springs Bleachery has begun the construction of a factory building 360 by 130 feet which has a capacity of 20,000 spindles. The company is also building 50 or 60 new cottages for its operatives.

MURFREESBORO. J. C. Beesley and associates are promoting the organization of a company to build a cotton mill at this place.

VERMONT.

BENNINGDON. At a recent meeting of the Board of Trade plans were inaugurated for the organization of a stock company to revise the hosiery industry of this city. It is proposed to form a company of many stockholders and start the new business.

WISCONSIN.

MERRILL. The Merrill Knitting Co. is to increase their capital stock and also the manufacturing facilities of the plant. A two-story brick addition 40 x 75 feet will be built.

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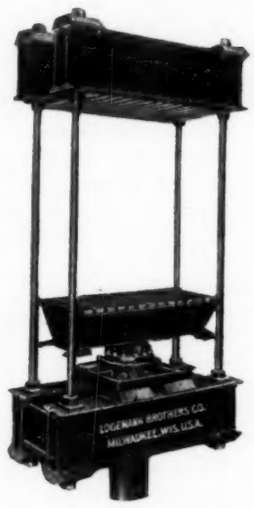

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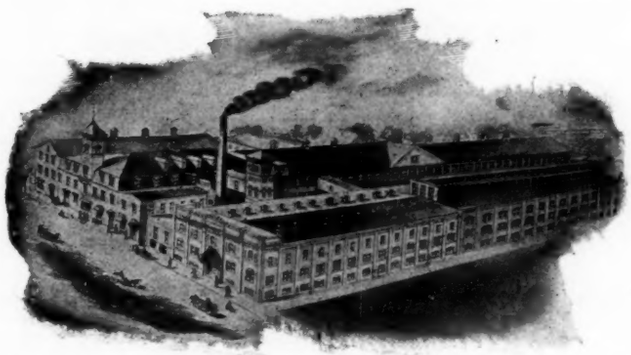

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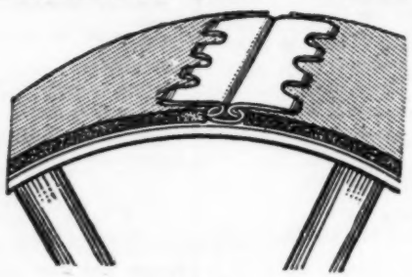

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Boston, April 9, 1913.

To the Stockholders of the United States Worsted Company:

The present UNITED STATES WORSTED COMPANY acquired on November 20, 1912, the property and assets of the UNITED STATES WORSTED COMPANY OF MAINE, the LAWRENCE DYE WORKS, and the SILESIA WORSTED MILLS, and since that date these properties have been operated by the present company.

At the same time this company acquired an option on the SAXONY MILLS, and since that time its operations have likewise been for the account of the present company.

The manufacturing plants known as the UswocoMills, the Silesia Mills, and the Saxony Mills are in every respect modern and up-to-date, and the physical condition of the plants which the Company acquired have fully come up to the expectations of the Company.

The spinning business of the Company has been satisfactory, and has shown good profits, and savings have been effected in the executive and accounting departments of the New York office and Mills of the Old United States Worsted Company to an amount approximating $114,000 per annum.

The properties of the United States Worsted Company of Maine were taken over by the present company upon the basis of a balance sheet prepared by chartered accountants, as of June 29, 1912.

From the results of an examination which is now being made for the Committee under the Plan of Reorganization, and which is not yet completed, it appears that the amount of the assets in the inventory of the United States Worsted Company, as of June 29, 1912, were largely overstated, and that the current liabilities of the Company, as of the same date, were understated. Reports of the United States Worsted Company (of Maine) showed that the Company had been making substantial earnings up to June 29, 1912. It now appears, however, from the examinations which have been made by the accountants that the assets of the United States Worsted Company (of Maine) have been still further reduced by large losses between July 1, 1912, and November 20, 1912, as well as by dividends paid on the preferred stock of the United States Worsted Company and Lawrence Dye Works during the same period, none of which appear to have been earned.

The examination already referred to further shows that the net quick assets of the Lawrence Dye Works were also substantially less than the amount shown in its balance sheet prior to its consolidation.

The assets of the Silesia Worsted Mills, Inc., were taken over upon the basis of the balance sheet of September 1, 1912. The assets acquired from that Company proved to exceed, by a substantial amount, the assets shown by the balance sheet in question.

For the reasons above stated, the net quick assets of the present company are much less than was contemplated by the Plan of Reorganization. In order to provide the company with necessary working capital and maintain its high credit, arrangements have been made by the Bankers for supplying the sum of $1,000,000, of which $700,000 has already been temporarily loaned by them to the Company, and the indebtedness represented by such loan has been made subordinate to the indebtedness represented by all other notes of the Company, and to all indebtedness incurred for materials and supplies.

As soon as the accountants have finally completed their investigation, and so far as possible have placed the responsibility for the deficiency in the assets of the United States Worsted Company (of Maine) and the Lawrence Dye Works, some plan will be proposed for providing permanently such additional working capital as may be needed in addition to the quick assets actually acquired from the United States Worsted Company and the Lawrence Dye Works.

In view of the character of the manufacturing properties and the opportunities for business, as I now find them, I am of the opinion that, with a provision for adequate working capital, and with economies already effected in the management and operation of the old United States Worsted Company's affairs, the present company will eventually be in a position to earn reasonable dividends upon a proper capitalization.

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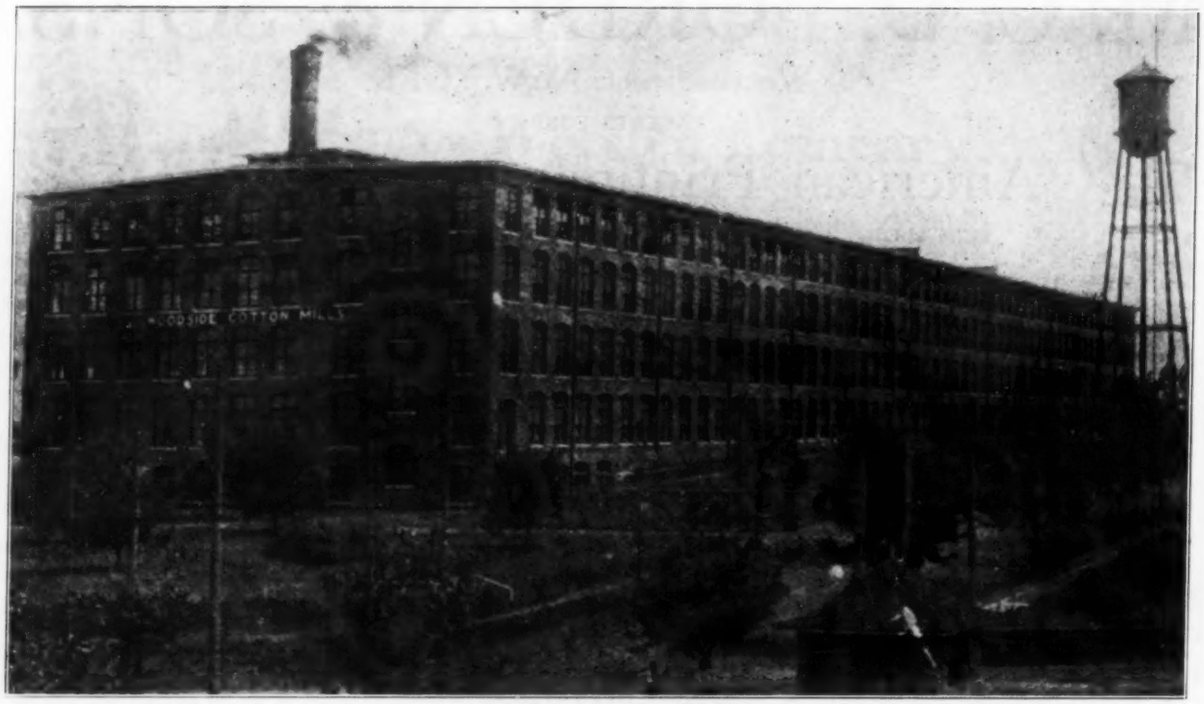

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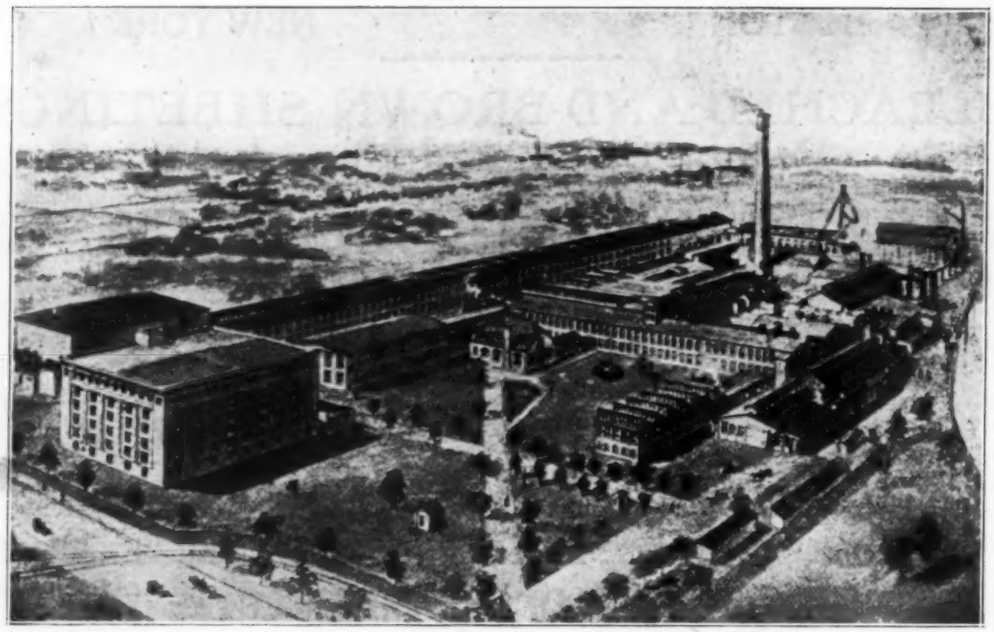

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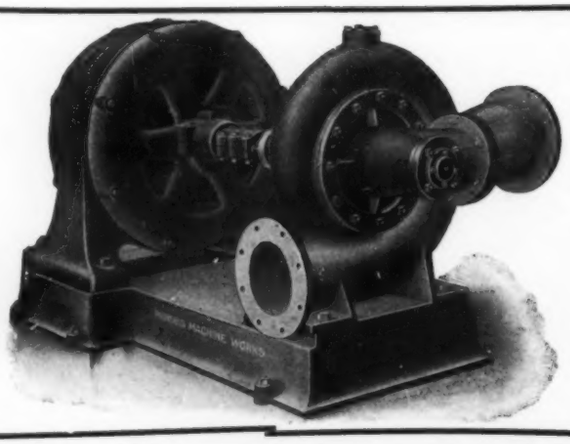

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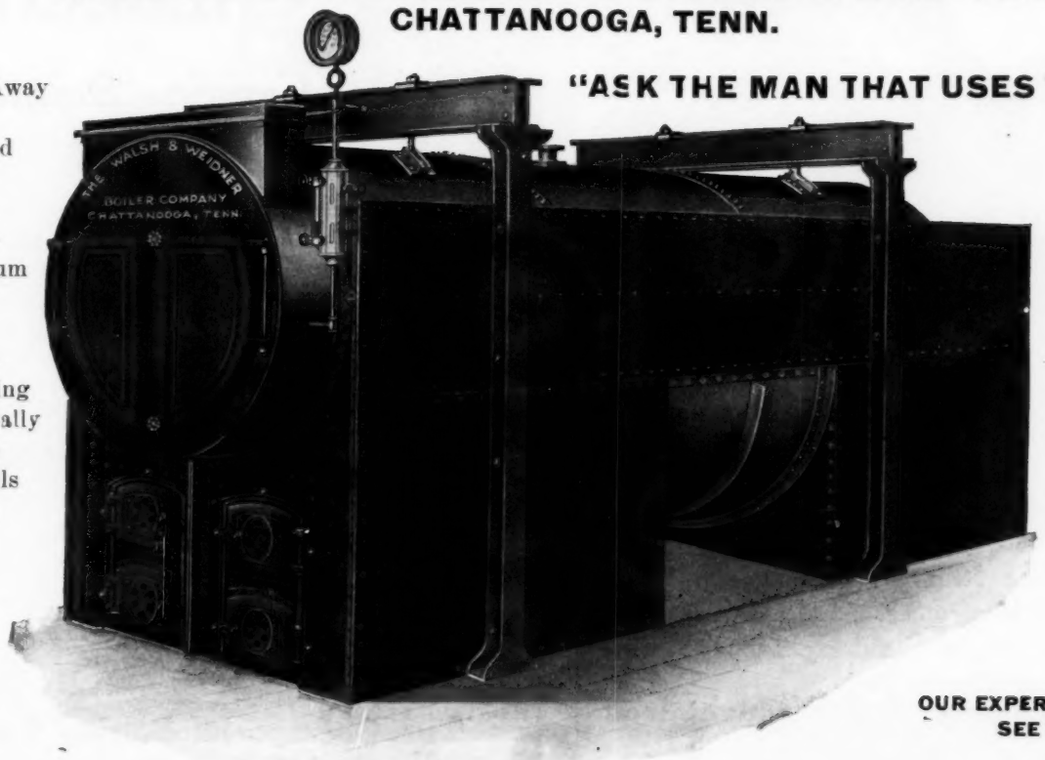

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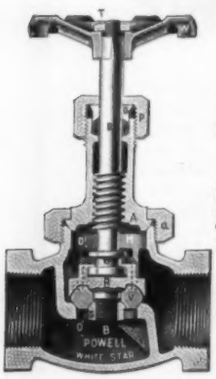

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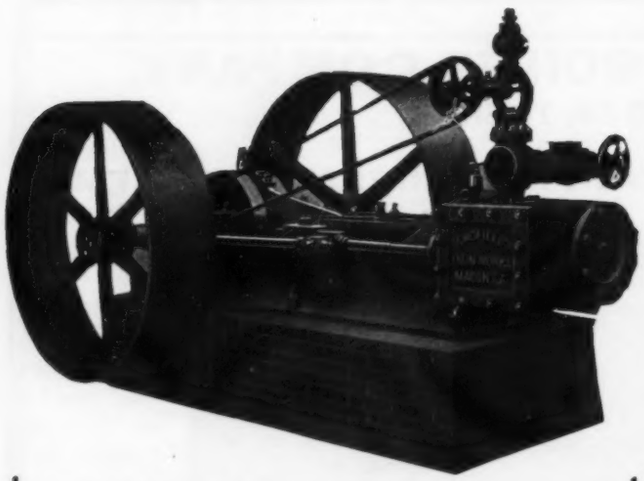

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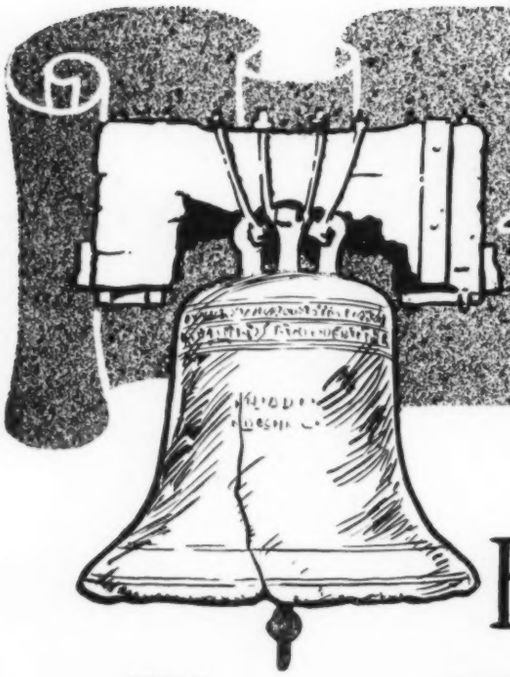

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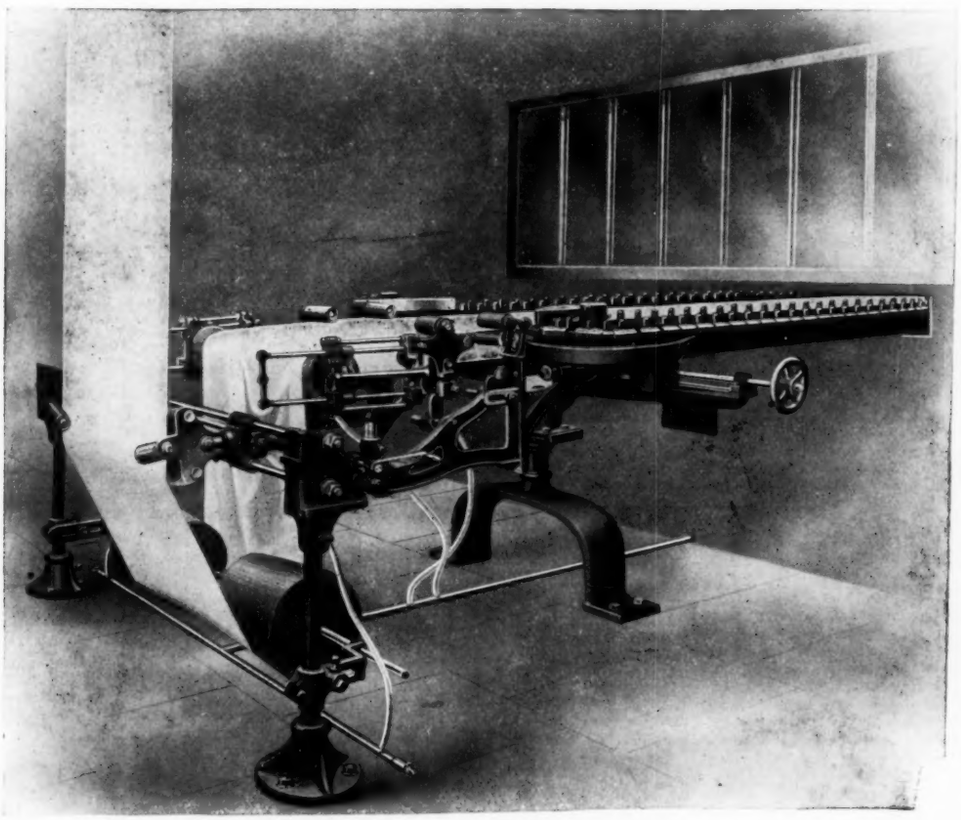

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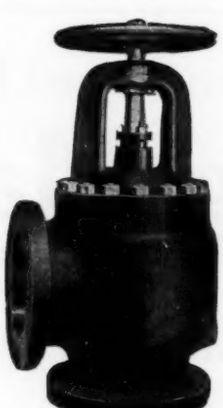

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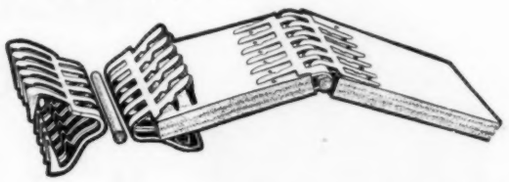

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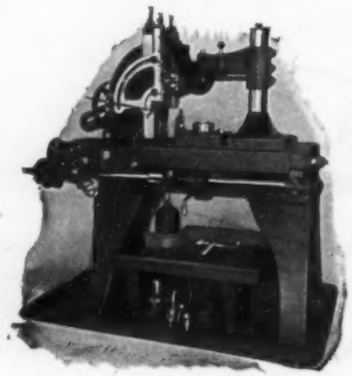

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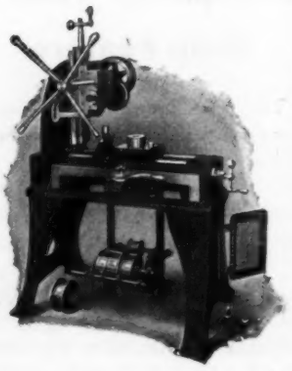

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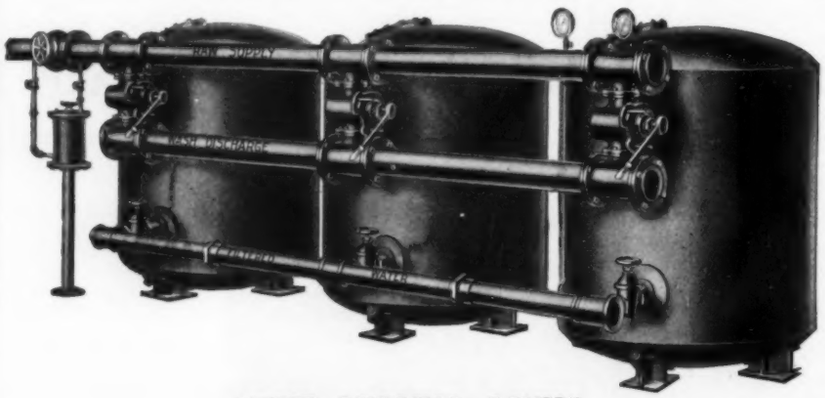

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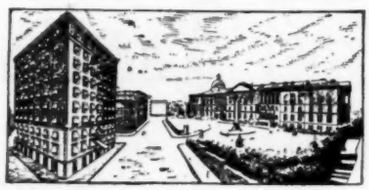

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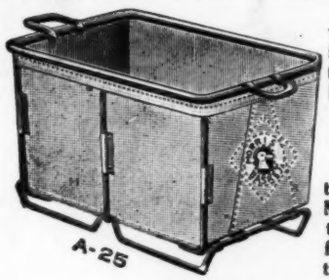

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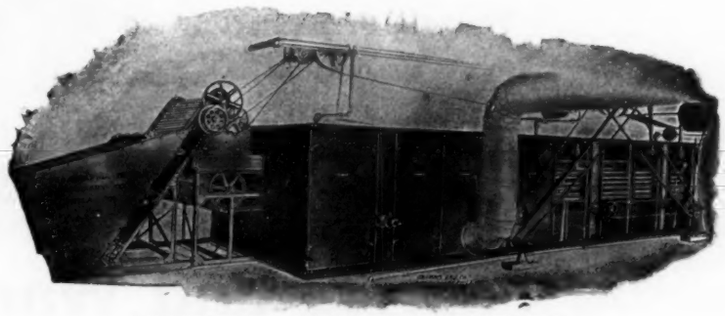

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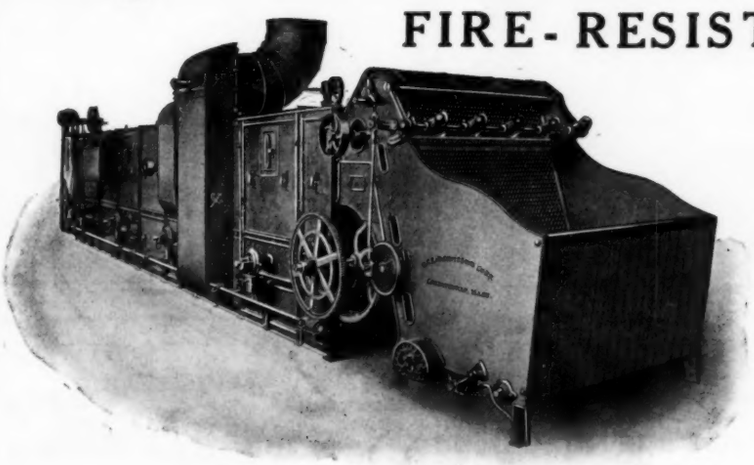
Sargent Automatic Stock Dryers

FIRE-RESISTING



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Write for Catalog Today

Over-Driven Extractor.

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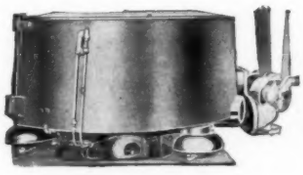

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Saves Labor
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Saves Drugs
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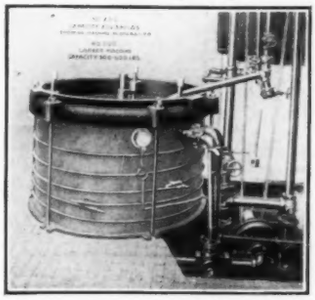

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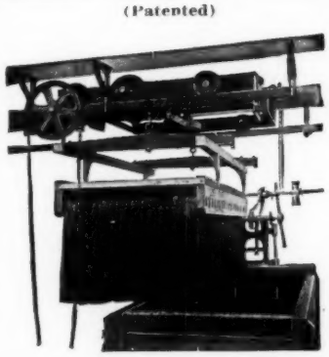

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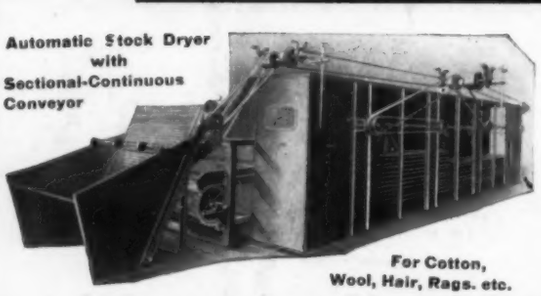

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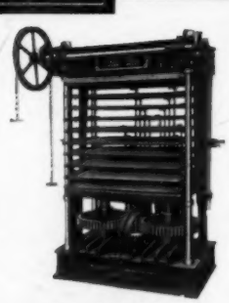

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